AW3SM-EN2011.3.312:50PM페이지1 in

SAMSUNG

REFRIGERATOR

BOTTOM MOUNT FREEZER

MODEL NAME : RF4287HARS
RF4287HAPN
RF4287HAWP
RF4287HABP

MODEL CODE : RF4287HARS/XAA
RF4287HAPN/XAA
RF4287HAWP/XAA
RF4287HABP/XAA
RF4287HARS/XAC

SERVICE Manual

REFRIGERATOR

RF4287HA**

CONTENTS

1. PRECAUTIONS(SAFETY WARNINGS) · 6
2. PRODUCT SPECIFICATIONS · · · · 10
3. DISASSEMBLY AND REASSEMBLY · 27
4. TROUBLESHOOTING · · · · · · · · 56
5. EXPLODED VIEW & PARTS LIST · · 105
6. PCB DIAGRAM · · · · · · · · · · 122
7. WIRING DIAGRAM · · · · · · · · · 127
8. SCHEMATIC DIAGRAM · · · · · · 131

For the latest parts information, Please access to our service web site
(• North America : http://service.samsungportal.com)

WARNING

IMPORTANT SAFETY NOTICE

The service guide is for service men with adequate backgrounds of electrical, electronic, and mechanical experience. Any attempt to repair a major appliance may result in personal injury and property damage. The manufacturer or dealer cannot be responsible for the interpretation of this information.

SAMSUNG ELECTRONICS AMERICA, INC.
Technical Service Guide
Copyright ©2010

All rights reserved. This service guide may not be reproduced in whole or in part in any form without written permission from the SAMSUNG ELECTRONICS Company.

AW3SM-EN2011.3.312:50PM페이지4 in

Contents

1. Precautions(Safety Warnings) · · ·

AW3SM-EN2011.3.312:50PM페이지5 in

Contents

4-2-3. If ICE Room Fan does not operate · · · 81
4-2-4. If FAN does not operate (Flex Room - FAN) · · · 82
4-2-5. If Ice Maker does not operate · · · 83
4-2-6. If defrost does not operate (F,R DEF Heater) · · · 84
4-2-7. If Power is not supplied · · · 85
4-2-8. If compressor does not operate · · · 86
4-2-9. When alarm sounds continuously without stop(related with buzzer sound) · · · 88
4-2-10. If Mid Drawer Panel PCB does not work normally · · · 90
4-2-11. When refrigerator ROOM Lamp does not light up · · · 91
4-2-12. If ICE Water is not supplied · · · 92
4-2-13. If Cubed or Crushed Ice is not supplied · · · 93
4-2-14. If Cover Ice Route Motor(Geard Motor) is not working normally · · · 94
4-2-15. If Inverter PCB Power is not supplied · · · 95
4-2-16. LED blinking frequency depending on protecting functions · · · 96
Spm internal diode voltage · · · 97
Inverter controller board connector location · · · 98
Inverter pcb circuit diagram · · · 99
4-3-1. inrush current protecting circuit · · · 100
4-3-2. power source(hybrid ic) · · · 100
4-3-3. location sensing resistance area · · · 101
4-3-4. sensing current area · · · 101
4-3-5. comp operating signal area · · · 102
4-3-6. bootstrap charging area · · · 102

5. Exploded View & PARTS LIST · · · 103
5-1) Freezer · · · 104
5-2) Refrigerator · · · 106
5-3) Cabinet · · · 109
5-4) Disassembly of Door Refrigerator L · · · 112
5-5) Disassembly of Door Refrigerator R · · · 113
5-6) Disassembly of Door freezert · · · 116
5-7) Disassembly of Flex Zone Door · · · 118

6. PCB DIAGRAM · · · 120
6-1) PCB Layout with part position · · · 121
6-2) PCB Layout with part position (Inverter Board) · · · 122
6-3) Connector Layout with part position (Main Board) · · · 123
6-3-1. RF4287HA** · · · 123
6-4) Connector Layout with part position (Inverter Board) · · · 124
6-4-1. RF4287HA** · · · 124

7. WIRING DIAGRAM · · · 125
7-1) Model : RFG295AA**[BETTER] · · · 125
7-2) Model : RF4287AA**[BEST] · · · 126
7-3) Model : RFG299AA**[7" LCD] · · · 127
7-4) Model : RFG294AA**[SEARS] · · · 128

8. SCHEMATIC DIAGRAM · · · 129
8-1) Whole block diagram · · · 129
8-1-1. MAIN BLOCK(RF4287**) · · · 129
8-1-2. INVERTER BLOCK(RF4287***) · · · 130
8-2) CIRCUIT DIAGRAM · · · 131
8-2-1. MAIN · · · 131
8-2-2. INVERTER · · · 132

1. PRECAUTIONS(SAFETY WARNINGS)

- Unplug the appliance before the changing or repairing the electric parts.

→ Be careful the electric shock.

- When exchanging the parts, use the correct parts.

→ Check the model name, rating voltage, rating current, running temperature symbols.

- When troubleshooting, connect firmly the types of harness.

→ Make not to be separated when some power is imposed.

- Check the traces of water infiltration at the electric parts.

→ If there is a trace of water infiltration, exchange or tape the parts.

- Check the assemble status of parts after troubleshooting.

→ It must be in the same assembled state when compared with the state before disassembly.

- Check the use circumstance of refrigerator.

→ If the refrigerator is installed at the place that is damp or wet, or status of installation is unstable, change the installation place.

- Ground the refrigerator properly

→ Particularly, Be sure to earth when there is a risk of an electric leakage by humidity or wetness.

- Do not use multi plugs in a plug socket at the same time.
  Check if the power cord and socket is damaged, pressed, squeezed, or fired.

→ If the plug or plug socket is damaged, repair or exchange it immediately.

- Do not allow consumers to repair the appliance by themselves.

- Do not store other materials except the foods.

→ Drugs or scientific materials : difficult to keep precise temperature.

→ The inflammables(alcohol, benzene, ether, LP gas, butane gas etc.): have risk of explosion.

PRECAUTIONS(SAFETY WARNINGS)

Read all instructions before repairing the product and follow the instructions in order to prevent danger or property damage.
Plug out and remove all the items in regrigerator prior to repair.

CAUTION/WARNING SYMBOLS DISPLAYED

Warning	*Indicates that a danger of death or serious injury exists.*
Caution	*Indicates that a risk of personal injury or material damage exists.*

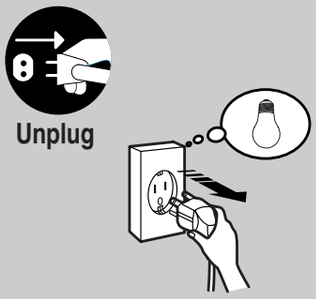
SYMBOLS

means "Prohibited".
means "Do not disassemble".
means "No contact".
means "Warning or Caution".
means "Unplug the unit before preforming service"
means "Earth or Ground".

Warning & Caution

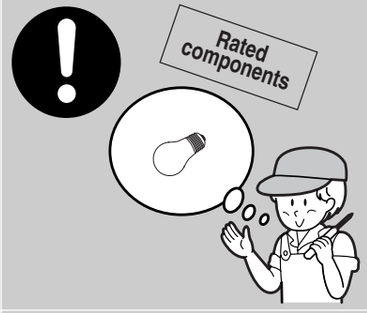
Plug out to exchange the interior lamp.

- *It may cause electric shock.*



Use the rated components on the replacement.

- *Check the correct model, rated voltage, rated current, operating temperature and so on.*



On repair, make sure that the wires such as harness are bundled tightly.

- *Bundle tightly wires in order not to be detached by the external force and then not to be wetted.*

On repair, remove completely dust or other things of housing parts, harness parts, and check parts.

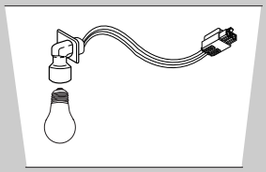
- *Cleaning may prevent the possible fire by tracking or short.*

After repair, check the assembled state of components.

- *It must be in the same assembled state when compared with the state before disassembly.*

Check if there is any trace indicating the permeation of water.

- *If there is that kind of trace, change the related components or do the necessary treatment such as taping using the insulating tape.*



PRECAUTIONS(SAFETY WARNINGS)

✻ Please let users know following warnings & cautions in detail.

⚠ Warning & Caution

Do not allow users to put bottles or kinds of glass in the freezer.

- *Freezing of the contents may inflict a wound.*

Do not allow users to store narrow and lengthy bottles or foods in a small multi-purpose room.

- *It may hurt you when refrigerator door is opened and closed resulting in falling stuff down.*

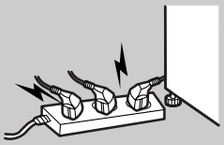
Do not allow users to store pharmaceutical products, scientific materials, etc., in the refrigerator.

- *The products which need precise temperature control should not be stored in the refrigerator.*

Do not allow users to plug several appliances into the same power receptable.

- *May cause abnormal generation of heat or fire.*

Prohibition



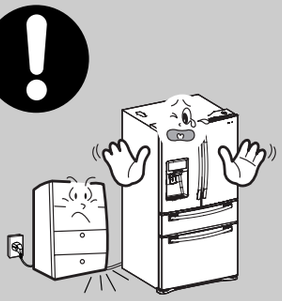
Do not allow users to disassemble, repair or alter.

- *It may cause fire or abnormal operation which leads to injury.*

Do not disassemble

Do not allow users to bend the power cord with excessive force or do not have the power cord pressed by heavy article.

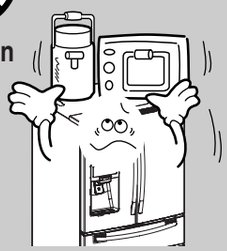
- *May cause fire.*



Do not allow users to store articles on the product.

- *Opening or closing the door may cause things to fall down, which may cause injury.*

Prohibition



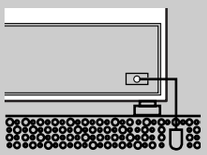
Do not allow users to install the refrigerator in the wet place or the place where water splashes.

- *Deterioration of insulation of electric parts may cause electric shock or fire.*

Make sure of the earth.

- *Be sure the product is properly grounded.*

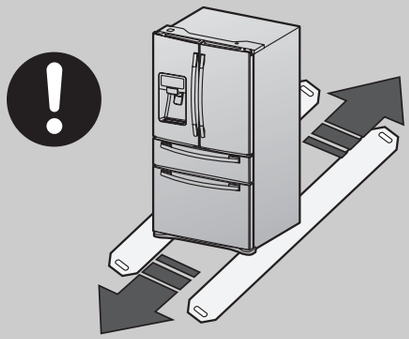
Earth



PRECAUTIONS(SAFETY WARNINGS)

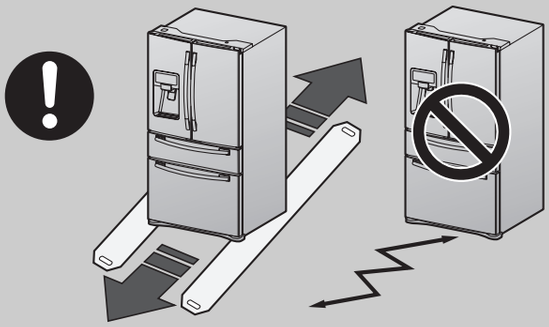
FLOORING

For proper installation, this refrigerator must be placed on a level surface of hard material that is the same height as the rest of the flooring. This surface should be strong enough to support a fully loaded refrigerator, or approximately 660lbs(299kg).



MOVING

Protect the finish of the flooring. Cut a large section of the cardboard carton and place under the refrigerator where you are working. When moving, be sure to pull the unit straight out and push back in straight.



AW3SM-EN2011.3.312:50PM페이지10 in

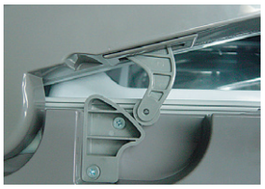
2. PRODUCT SPECIFICATIONS

2-1) Introduction of main function · · ·

2. PRODUCT SPECIFICATIONS

2-1) Introduction of Main Function

● **A newly developed SAMSUNG bottom mount freezer in 2010 has the following characteristics.**

	Surround Multi Flow • Uniform cooling for each shelf and even in corner in fresh food compartment by centerpositioned fan and duct with multiple flow effluences.
	Twin Cooling System • The refrigerator and the freezer have two evaporators. Given this independent system, the freezer and the refrigerator are cooled individually as required and are, therefore, more efficient. Food odor from the refrigerator does not affect food in the freezer due to separate air flow circulation.
	Flex Zone • The Flex Zone is a full-width independent mid drawer with adjustable temperature control.
	Counter Height Design • The Independent Mid Drawer(Flex zone) is counter Height to fit contemporary kitchen.
	Two Lever Dispenser • Two lever dispenser can be get ice or water easily.
	**Secure Auto Close Door System** • Secure Auto Close Door System • Cool tight doors • Energy saving • Preventing sweat on fridge doors

2. PRODUCT SPECIFICATIONS

▶ Changing Items

NO	Item	Details	New Model
1	Ez-Open Handle System	The freezer door and Mid drawer (Flex zone) are more user-friendly. So, They come as much convenient.	
2	Emotional Lighting	The lighting helps you find groceries Easier by lighting down when you open Mid drawer(Flex zone) and freezer door.	
3	Smart Divider	- Easy rail partition can divide off 4 independent space easily. - The rail partition allow you to divide the space of the convertible room easier.	
4	Slim Water Filtration System	Slim water filter is placed between crispers for changing filter conveniently without removing items from Refrigerator.	
5	Touch Sensor Lighting	The display change more wider and apply Blue LED lighting. And Touch Sensor Lighting make the refrigerator graceful.	

PRODUCT SPECIFICATIONS

2-2) Specifications

ELECTRICAL SPECIFICATIONS

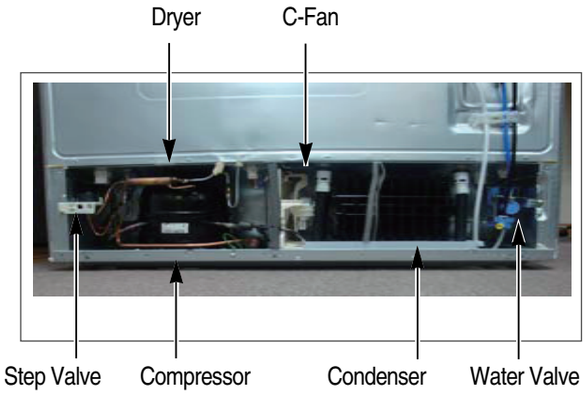
Defrost Control · · · · · · · · · · · · · · · From 12 to 22 hrs(comp.run time)
Thermo Bimetal Protector · · · · · · · · · · 140°F(60℃)(off) 104°F(40℃)(on)
Defrost Thermistor(502AT) · · · · · · · · · · · F: 50°F(10℃)(off)
R: 59°F(15℃)(off)
Electrical RatingAC115V 60Hz · · · · · · · · · · · · 11.6 Amps
Maximum Current Leakage · · · · · · · · · · · · · · 0.25 mA
Maximum Ground Path Resistance · · · · · · · · · · 0.1 Ohm
Energy Consumption · · · · · · · · · · · · · · · 562kWh/year

NO LOAD PERFORMANCE

Ambient Temperature · · · · · · · ·	70°F(21℃)	90°F(32℃)
Refrigerator · · · · · · · · · · · · · · · · ·	34°F(1℃)~46°F(7℃)	
	34°F(1℃)~46°F(7℃)	
Flex Zone · · · · · · · · · · · · · · · · · ·	29°F(-1℃)~42°F(5℃)	
	29°F(-1℃)~42°F(5℃)	
Freezer · · · · · · · · · · · · · · · · · · ·	-8°F(-22℃)~8°F(-14℃)	
	-8°F(-22℃)~8°F(-14℃)	
Run Time,% · · · · · · · · · · · · · · · · ·	<60	<80

REFRIGERATION SYSTEM

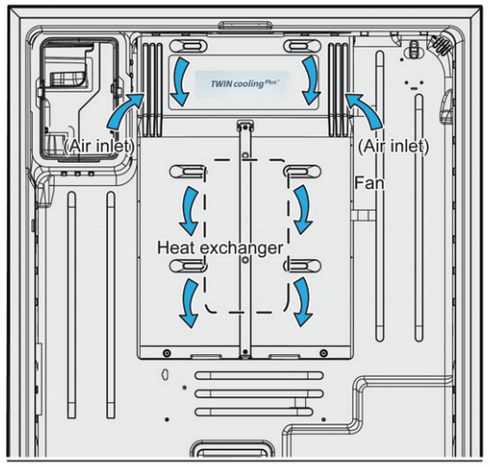
Refrigerant Charge (R134a) · · · · · · · · · · · · 5.64 oz(160g)
MKV190C-L2B · · · · · · · · · · · · · · · 1314 Btu/hr(0.385kw)
Compressor oil · · · · · · · · · · · · · · · · · · Freol α 15c
R Capillary tube(Dia, Length) · · · · · · · · · · 0.032 " ,118 " (0.82mm,3500mm)
F Capillary tube(Dia, Length) · · · · · · · · · · 0.032 " ,118 " (0.82mm,3500mm)



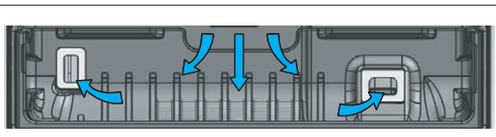
INSTALLATION

Clearance must be provided for air circulation
AT TOP · 2" (50mm)
AT SIDES · 3 3/4 "(95mm)
AT REAR · 2" (50mm)

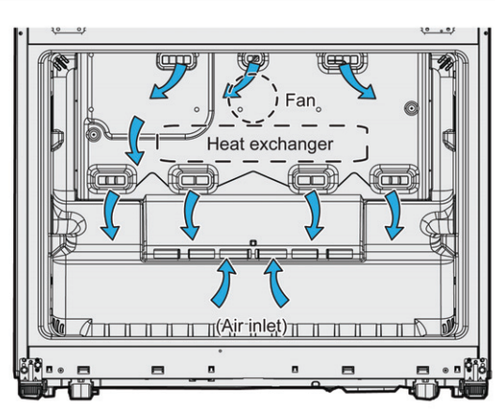
REFRIGERATOR



FLEX ZONE



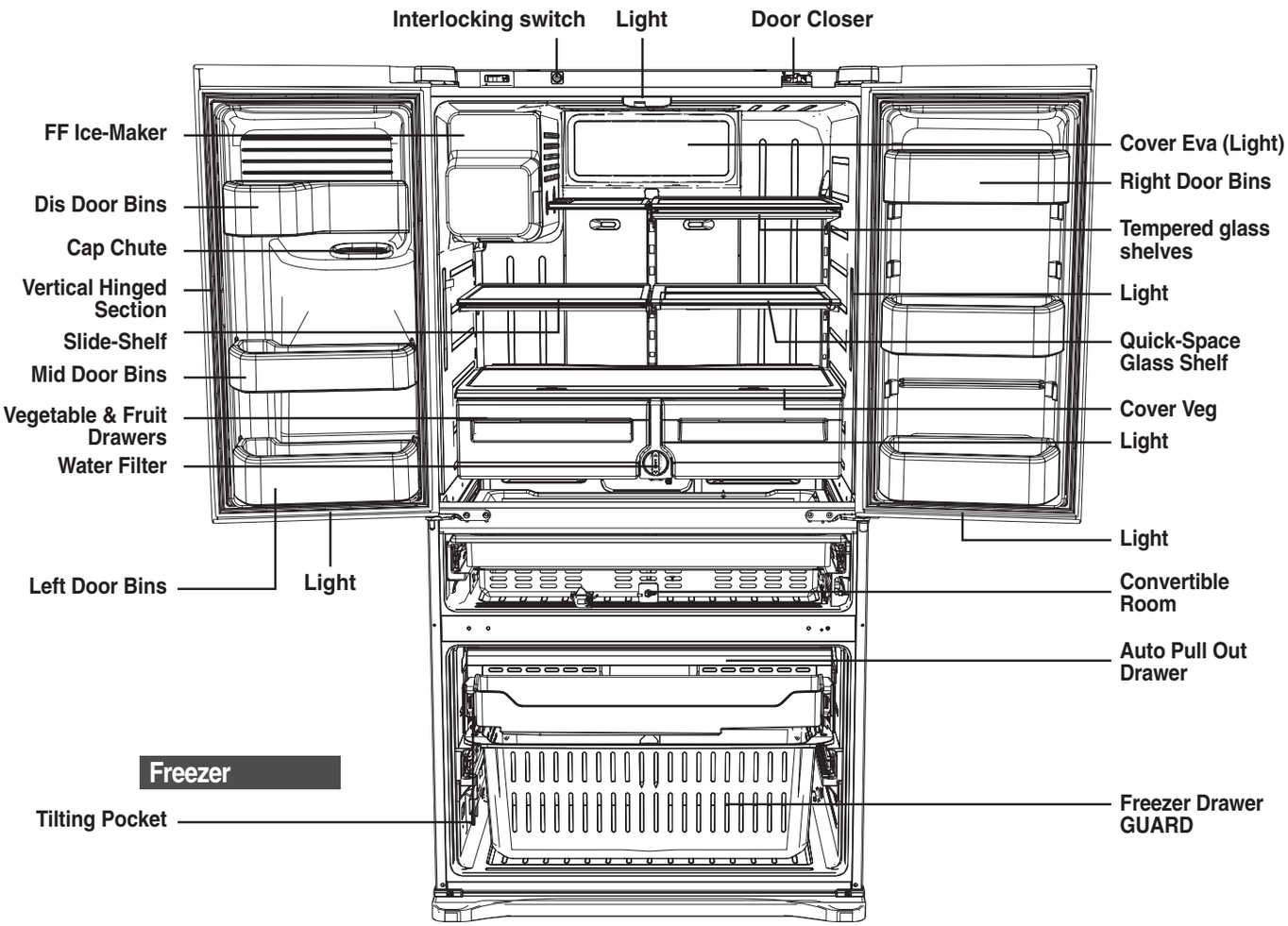
FREEZER



PRODUCT SPECIFICATIONS

2-3) Interior Views

Refrigerator



PRODUCT SPECIFICATIONS

2-4) Model Specification & Specification Chart

ITEM	Model		RF4287HA**
			Ice & Water Dispenser with Pantry
External size	W		35 3/4 inch (908mm)
	D	On Cabinet	29 7/8 inch (760mm)
		W/O Handle	33 3/4 inch (858mm)
		With Handle	36 1/4 inch (920mm)
	H	W/O Hinge Cap	68 1/2 inch (1740mm)
		With Hinge Cap	69 7/8 inch (1774mm)
Net Capacity	Total		27.98 Cu.ft (792 ℓ)
	Freezer		7.74 Cu.ft (219 ℓ)
	Flex Zone		3.97 Cu.ft (112 ℓ)
	Refrigerator		16.28 Cu.ft (461 ℓ)
Efficiency of Volume			60%
Weight	Set		362.4 Pounds (164kg)
	Packing		402.1 Pounds (182kg)
Packing	Width		38 5/8 Inch (980mm)
	Depth		39 3/8 Inch (1001mm)
	Height		75 5/8 Inch (1923mm)
Compressor			Reciprocate
Rated Frequency and Frequency			AC 115V/60Hz
Refrigerant			R 134a
Foaming Agent			C-Pentane
Refrigerant Input Amount			5.64 oz (160g)
Type Refrigerator			Indirect Cooling Method Refrigerator
Motor Rated Consumption Power			140W
Electric Heater Rated Consumption Power			340W

COLOR			
	Cabinet (Both Side)	Door	Molding
Black	All Black	Empire Black	I Black
Real STS	Noble STS	Versailles Stainless	Creamy STS
White	Snow White	Snow White	Snow White
Platinum STS	Noble STS	Stainless Platinum	Creamy STS

PRODUCT SPECIFICATIONS

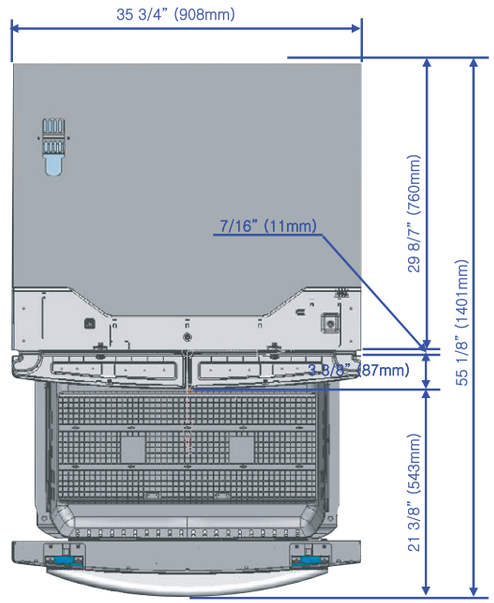
Items				Specification	
Model				RF4287HA	
Components for Freezer	Compressor		Model	MKV190C-L2B	
			Starting type	BLDC	
			Oil Charge	FREOL α - 15c	
	Evaporator		Freezer	SPLIT FIN TYPE	
			Refrigerator	SPLIT FIN TYPE	
	Condenser			Forced and Natural Convection Type	
	Dryer			Molecular shieve XH-9	
	Capillary tube(Dia x Length)			R : 0.032" x 118" (0.82mm x 3500mm) / F : 0.032" x 118" (0.82mm x 3500mm)	
	Refrigerant			R134a	
Room Temperature Sensor Components	Freezer	Model	Temperature Selection	ON(℉)	OFF(℉)
		THERMISTOR (F-SENSOR) 502AT	-8℉(-22℃)	-5℉(-20℃)	-11℉(-24℃)
			-2℉(-19℃)	1℉(-17℃)	-5℉(-21℃)
			8℉(-14℃)	11℉(-12℃)	5℉(-15℃)
	Flex	Model	Temperature Selection	ON(℉)	OFF(℉)
		THERMISTOR (F-SENSOR) 502AT	29℉(-1℃)	32℉(0℃)	26℉(-3℃)
			42℉(5℃)	45℉(7℃)	39℉(4℃)
	Refrigerator	Model	Temperature Selection	ON(℉)	OFF(℉)
		THERMISTOR (R-SENSOR) 502AT	34℉(1℃)	36℉(2℃)	32℉(0℃)
			38℉(3℃)	40℉(4℃)	36℉(2℃)
			46℉(7℃)	48℉(8℃)	44℉(6℃)
Defrost Related Components	Defrost Cycle	First Defrost Cycle (Concurrent defrost of F and R)		6hr ±10min	
		Defrost Cycle(FRE)		12~23hr(vary according to the conditions used)	
		Defrost Cycle(REF)		6~11hr(vary according to the conditions used)	
		Pause time		12 ±1min	
	Defrost Sensor	F/R Defrost-Sensor	Model	THERMISTOR (502AT)	
			SPEC	5.0 ㏀ at 77℉(25℃)	
		F/R Bimetal-thermo Protector	Rated	AC 125V 10A	
			Operating temperature	Off : 140℉(60℃) / On : 104℉(40℃)	
	Fuse	F/R Fuse	Rated	AC 250V 10A	
			Operating temperature	Off: 230℉(110℃)	

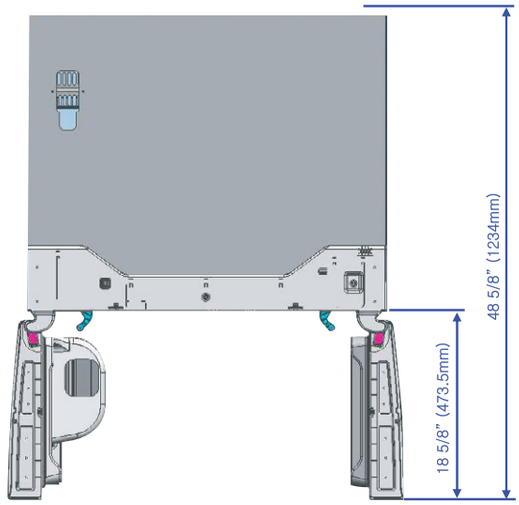
PRODUCT SPECIFICATIONS

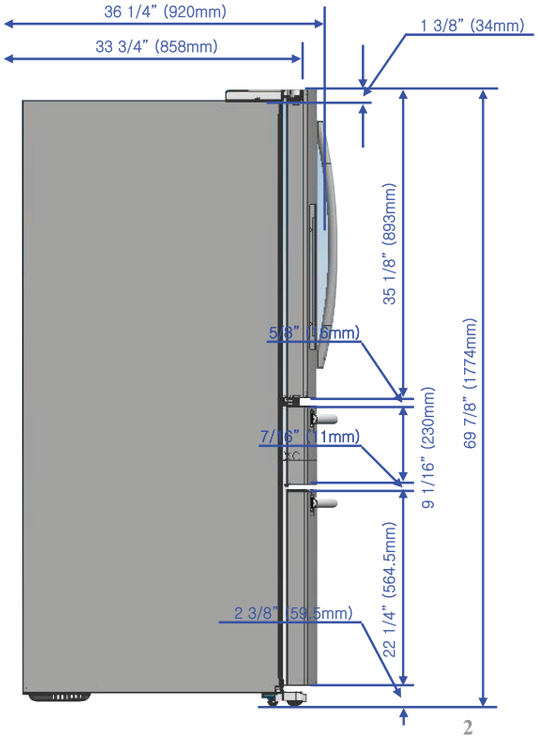
Items			Specification
Model			RF4287HA
Electric Components	Defrost Heater(FRE)	Heated at F Defrost	AC 120V, 230W
	Defrost Heater(REF)	Heated at R Defrost	AC120V, 120W
	DISPENSER Heater	Interlock with French Heater	AC120V, 1.6W
	FRENCH Heater	-	AC120V, 7W
	ICE Duct Heater	Interlock with Defrost Heater (FRE)	AC120V, 7W
	Damper	-	DC 12V, 1W
	Over Load Relay	Model	4TM445PHBYY-82
		Temp.ON	257± 41℉(125± 5℃)
		Temp.OFF	156.2± 48.2℉(69± 9℃)
	Rated Voltage		AC 115V/ 60Hz
	Motor-BLDC(FRE)		DC12V / FDQT06SS3
	Motor BLDC(ICE ROOM)		DC12V / DREP5020LB
	Motor-BLDC(REF)		DC12V / FDQT06SS3
	Motor-BLDC(CIRCUIT)		DC12V / FDQT04SS2
	Motor-DAMPER(PANTRY)		DC12V / NSBY001TD1
	Lamp LED(REF)		DC12V / 290~380mA
	Lamp LED(Flex&FRE)		DC 12V / 45~75mA
	Lamp LED(REF Side)		DC 12V / 45~75mA
	Lamp LED(Vegetable)		DC 12V / 95~145mA
	Lamp LED(REF Eva)		DC 12V / 65~95mA
	Door Switch	FRE	AC 125V 1.5A (1EA)
		REF & Flex	DC200V 1.5A / MS-406-SS-01(2EA)
		REF(ICE ROOM)	125~250V /11A, EMB606
	Power Cord		AC125V 15A
	Earth Screw		BSBN (BRASS SCREW)

PRODUCT SPECIFICATIONS

2-5)Dimensions of Refrigerator (Inches)

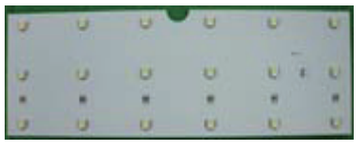






PRODUCT SPECIFICATIONS

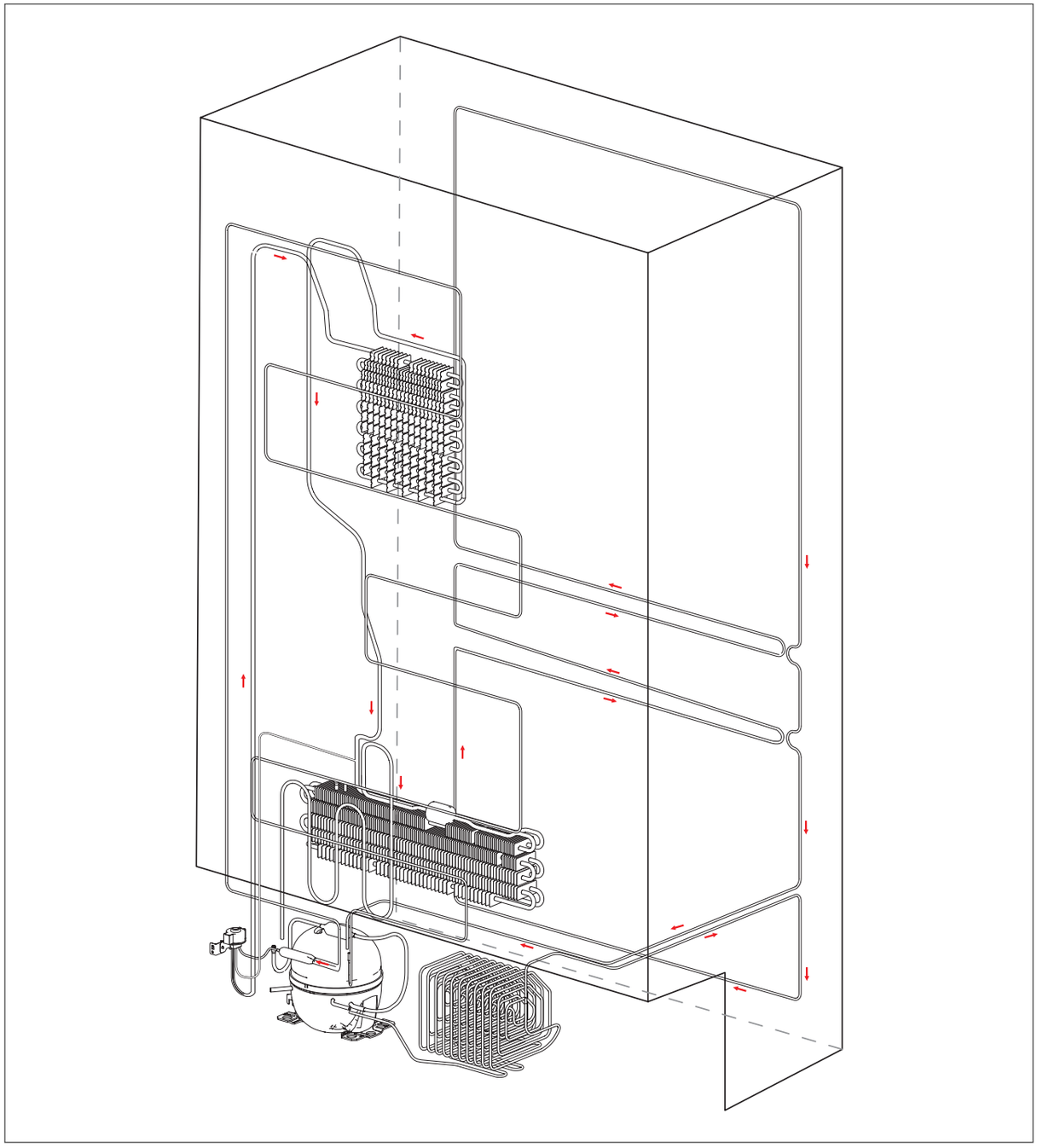
2-6) Optional Material Specification

	Part Name	Part Code	AMOUNT
	FILTER WATER-ASSY	DA29-00020B	1
	ASSY-PACKING SUB	DA99-00240S	1
	LED LAMP REF	DA96-00398H	1
	LED LAMP SIDE	DA96-00392C	2
	LED LMAP CONV(FRE)	DA41-00519R	4

PRODUCT SPECIFICATIONS

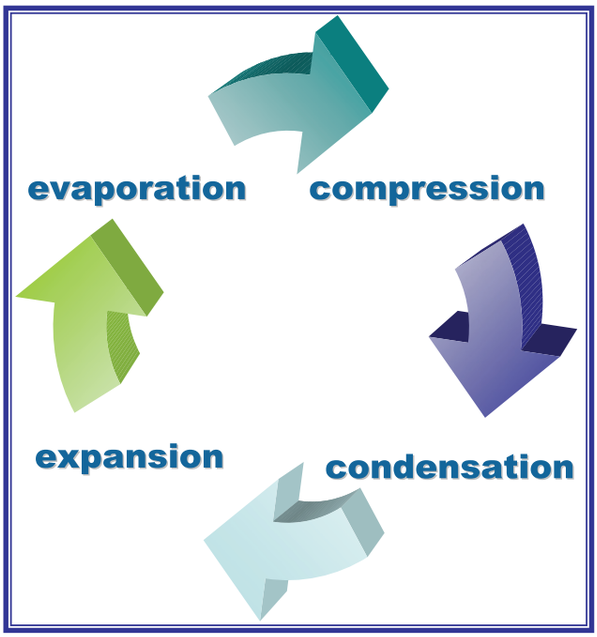
2-7) Refrigerant Route in Refrigeration cycle

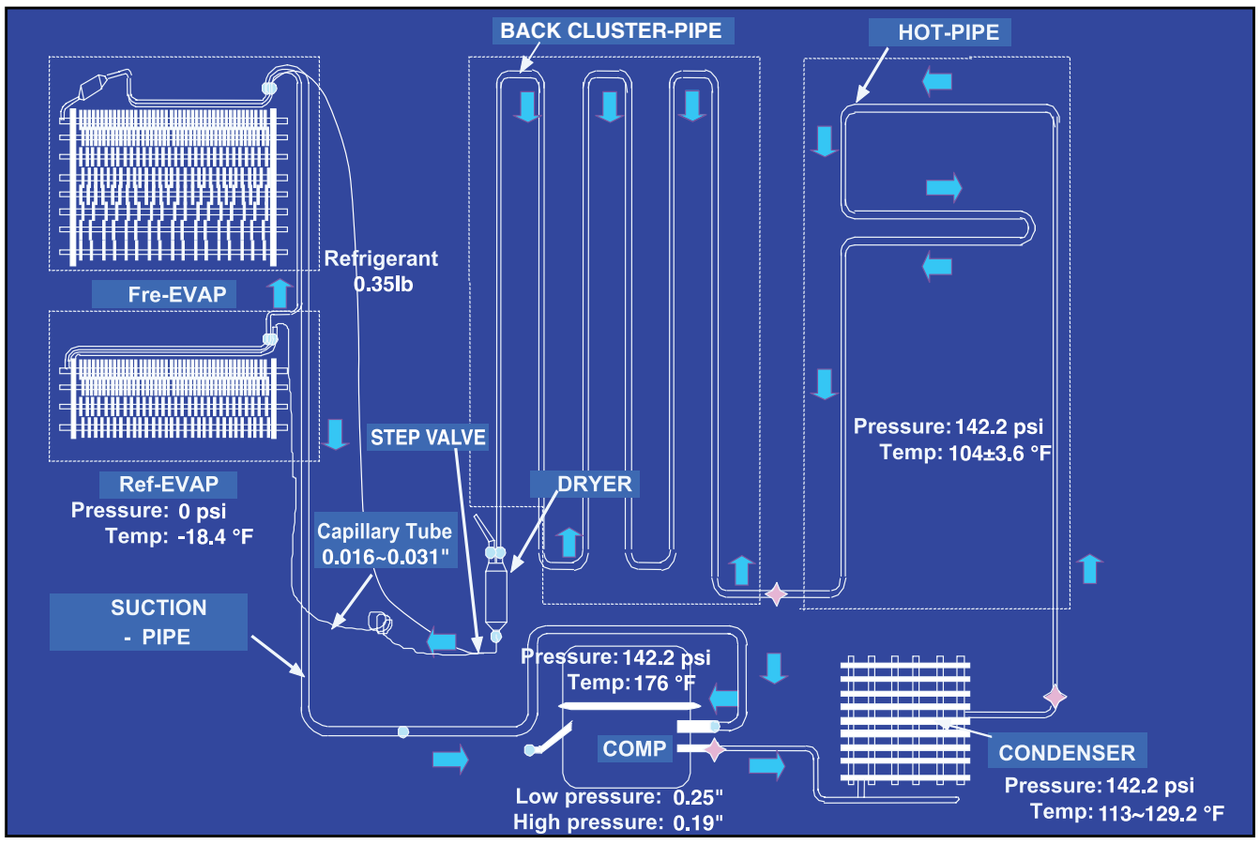
1. Compressor → Condenser → Hot Pipe → Back Cluster Pipe → Dryer → Ref Capillary Tube → Refrigerator Evaporator → Freezer Evaporator → Suction Pipe → Compressor
2. Compressor → Condenser → Hot Pipe → Back Cluster Pipe → Dryer → Fre Capillary Tube → Freezer Evaporator → Suction Pipe → Compressor



PRODUCT SPECIFICATIONS

2-7-1. PRINCIPLE OF FREEZEER





PRODUCT SPECIFICATIONS

2-7-2. Operation theory of refrigeration cycle components

■ Condenser

1) Role: A device which radiates heat to the outside (water/air) to make liquid state for the high temperature / high pressure gas refrigerant discharged from compressor

2) Types

A. Air-cooling Type : Condense air by circulating naturally or manually.

1) Natural Convection Type : Used for the household refrigerator which has small condensing capacity.

2) Manual Convection Type : Circulate air manually by FAN-Motor (Large capacity)

B. Water-cooling Type : Make cooling water pass through the pipe in the condenser (Large capacity)

※ Location

① CLUSTER heat-radiating type : All Pipes effective for radiating heat are formed in the right/left, and front side of refrigerator with hard urethanes and radiate heat through the whole surfaces of cabinet to ambient air.

② Install the condenser on the outside of the product. (An old model)

③ Make them cluster at the lower part of product and radiate heat manually by fan.

☞ Radiate condensed potential heat up to liquefy completely and make change the state without changing the gas temperature itself.

※ Pipe thickness

① Low pressure: 6.3mm ② High pressure : 4.7mm ③ Capillary : About 0.4-0.8mm

※ Condenser length (Based on 300 ℓ): 26.5 M

① Assistance : 5 M ② HOT-PIPE: 6.6 M ③ CLUSTER-PIPE: 15 M

■ Capillary

1. Role: A device which makes low temperature and pressure refrigerant by reducing the pressure the normal temperature / high pressure liquid refrigerant condensed from condenser, and supply it to the evaporator.

A. To evaporate more lower temperature in case of evaporation.

B. It flows to the evaporator without back flowing to condenser, if compressor stops, and the difference of pressure between high pressure and low pressure is small so it is easy to operate the compressor again.

2. Outline

A. Thickness : About 0.4-0.8ßÆ

B. Length : It is changeable to low temperature and pressure (10->5ß∏/ß≤) depends on the 2M of thin and long copper pipe wall resistance.

PRODUCT SPECIFICATIONS

2-7-2. Operation theory of refrigeration cycle components

■ Evaporator

1. Role: As the low pressure liquid refrigerant flowed from capillary absorbs heat inside of the refrigerator, it becomes low pressure gas and refrigerate the foods.
2. Theory: The low pressure refrigerant flowed to evaporator operates cooling which takes ambient evaporated potential heat with maintaining the evaporation up to evaporate completely.
3. Types of Evaporator

A. ROLL-BOND Evaporator → Direct Cooling ONE-DOOR Type

☞ Rolled and adhere the 2 aluminum plate and then make refrigerant passage.

B. PIN-PIPE Type → Indirect cooling TWO-DOOR Type

☞ a small aluminum plate on the aluminum pipe to increase the cooling effect.

■ Compressor

1. Role: It operates same as pump which pull out the subterranean water. It inhales the low temperature and pressure refrigerant gas (flowed out) from evaporator and make high temperature and pressure refrigerant liquid in the compressor and send it to the condenser.
2. Type of Condenser
   a. Back-and-forth motion type: A method that pistol makes back-and-forth motion through shaft and cylinder of motor rotation and compresses. ※ Used for household refrigerant
   b. Rotary Type: A method that inhales the refrigerant gas through the gap between the outside of rotor electric attached on the shaft and the inside of cylinder and compresses.
   c. Centrifugal Type
3. Please insert the explanation of inverter comp operation theory.

■ Dryer

1. Role: Absorb the moisture from the refrigerant that refrigeration cycle circulates and eliminate the foreign substance.
2. Structure: If even some moisture is included refrigerant is impossible to circulate by freezing the small capillary outlet, so silica gel or molecular sieve is (included and) sealed to absorb the internal moisture, and install a minute net to eliminate the foreign substance.

2-7-2. Operation theory of refrigeration cycle components

※.Influence of moisture

① Moisture precipitation – Blocked by ice
② Refrigerant and reaction
③ Life reduction of oil
④ Acceleration of oxidization
⑤ Copper plating phenomenon
⑥ Gas dissolution by the interaction of synthetic insulating material (insulator)

※.Influence of foreign substance

① Increase of condensed temperature.
② Increase of temperature.
③ Decrease of cooling efficiency
④ Shorten the life by friction between oil and foreign substance in the compressor.

■ Accumulator

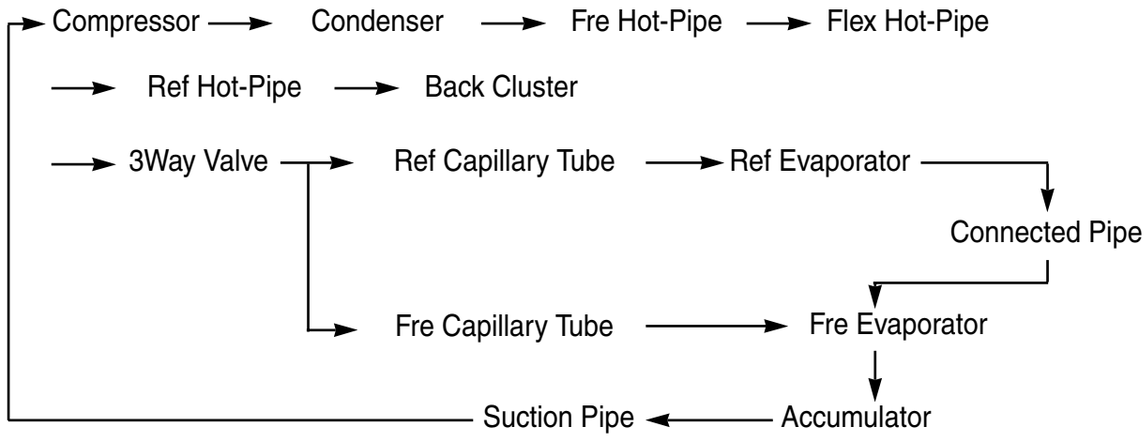
1. Role : To send a pure refrigerant gas to compressor by removing completely the refrigerant liquid from evaporator.

※ If a refrigerant liquid go into the compressor, overload is occurred.

PRODUCT SPECIFICATIONS

2-7-3. Refrigeration Cycle Type

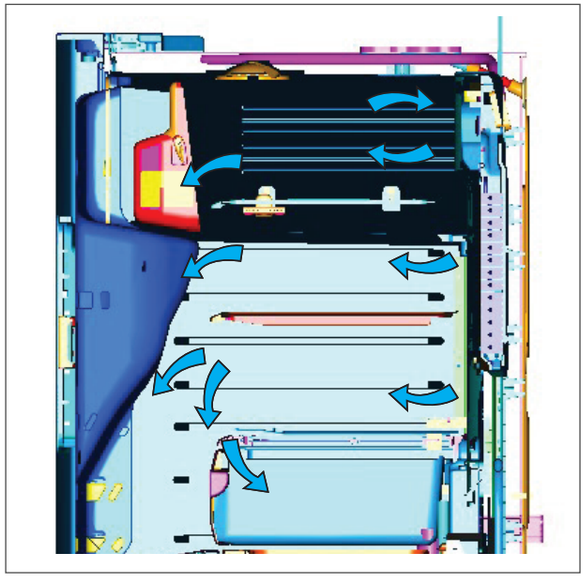
TDM Cycle



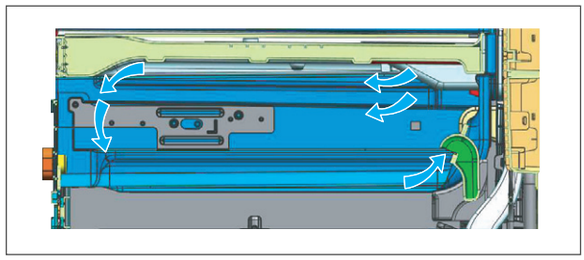
PRODUCT SPECIFICATIONS

2-8) Cooling Air Circulation

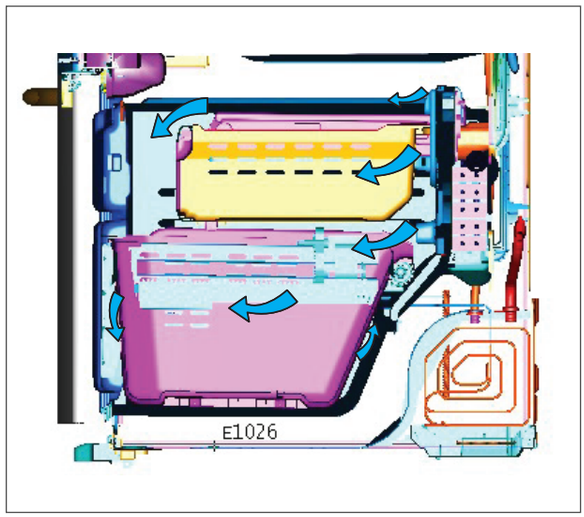
Refrigerator



Flex Zone



Freezer



AW3SM-EN2011.3.312:52PM페이지27 in

3. DISASSEMBLY AND REASSEMBLY

3-1) PRECAUTION · · · · · 28
3-2) Refrigerator Door · · · · · 29
3-3) Door Handle Freezer · · · · · 31
3-4) Door Handle Freezer & Flex zone · · · · · 32
3-5) Refrigerator Light · · · · · 33
3-6) Cover-Display & Water-Dispenser · · · · · 33
3-7) Water-Dispenser · · · · · 34
3-8) Glass Shelf · · · · · 35
3-9) Foldable Glass Shelf · · · · · 36
3-10) Vegetable & Fruit Drawers Shelf · · · · · 36
3-11) Case Water · · · · · 37
3-12) Case Water Filter · · · · · 38
3-13) Water Tank · · · · · 39
3-14) Motor Damper · · · · · 41
3-15) Water Filter (Assembly & Disassembly) · · · · · 42
3-16) Vertical Hinged Section · · · · · 43
3-17) Evaporator Cover In Refrigerator · · · · · 44
3-18) Evaporator In Refrigerator · · · · · 45
3-19) Freezer Door · · · · · 46
3-20) Convertible Door · · · · · 47
3-21) Flex Zone Door · · · · · 48
3-22) Ice-Maker · · · · · 49
3-23) Flex Zone Light · · · · · 50
3-24) Freezer Light · · · · · 50
3-25) Side Light · · · · · 51
3-26) Door Switch In Freezer · · · · · 51
3-27) Evaporator Cover In Freezer · · · · · 52
3-28) Evaporator In Freezer · · · · · 52
3-29) Machine Compartment · · · · · 53
3-30) Electric Box · · · · · 55

DISASSEMBLY AND REASSEMBLY

3-1) PRECAUTION

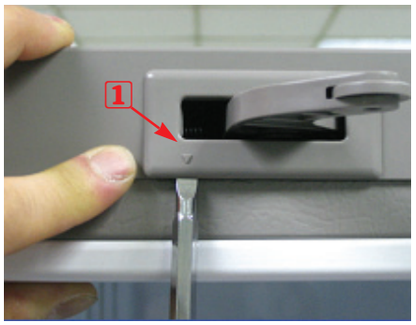
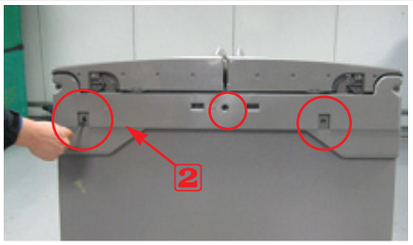
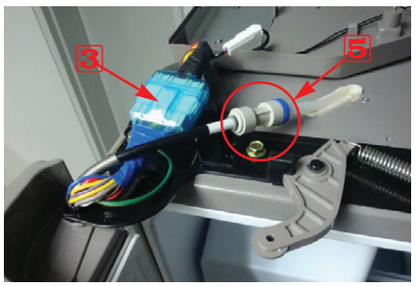
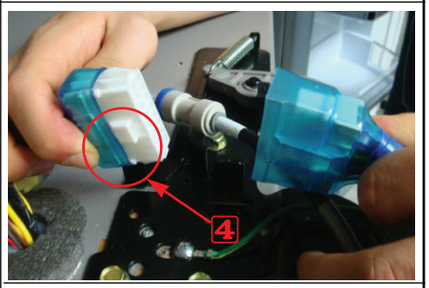
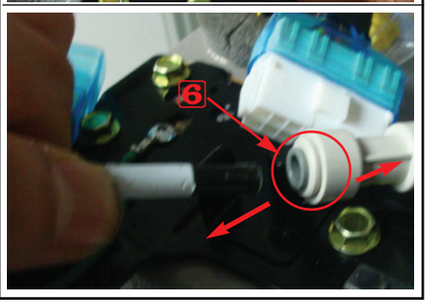
- Unplug the refrigerator before cleaning and making repairs.
- Do not dissemble or repair the refrigerator by yourself.
  - It may cause risk of causing a fire, malfunction and/or personal injury.
- Remove any foreign matter or dust from the power plug pins.
  - Otherwise there is a risk of fire.
- Do not use a cord that shows cracks or abrasion damage along its length or at either end.
- Do not plug several appliances into the same multiple power board. The refrigerator should always be plugged into its own individual electrical which has a voltage rating that matched the rating plate.
  - This provides the best performance and also prevents overloading house wiring circuits, which could cause a fire hazard from overheated wires.
- Do not install the refrigerator in a damp place or place where it may come in contact with water.
  - Deteriorated insulation of electrical parts may cause an electric shock or fire.
- The refrigerator must be grounded.
  - You must ground the refrigerator to prevent any power leakages or electric shocks caused by current leakage from the refrigerator.
- Do not put bottles or glass containers in the freezer.
  - When the contents freeze, the glass may break and cause personal injury.
- Do not store volatile or flammable substances in the refrigerator.
  - The storage of benzene, thinner, alcohol, ether, LP gas and other such products may cause explosions.

- Required Tools

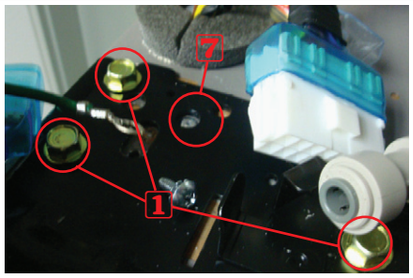
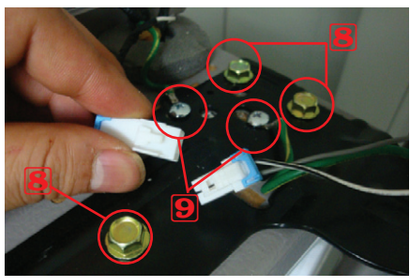
IMAGE	ITEM	USE
	Phillips Head Driver	Use for assembling and disassembling of screw
	Flat Head Driver	Use for assembling and disassembling of HomeBar, Dispenser, Deli Cartessen Box, Main PBA etc...
	Socket Wrench ø10mm	Use for assembling and disassembling of Door Hinge

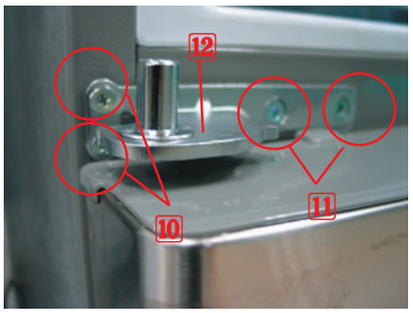
DISASSEMBLY AND REASSEMBLY

3-2) Refrigerator Door

Part Name	How To Do	Descriptive Picture
Refrigerator Door	1. With the door opened, remove the Cap Top Table(1) with a Flat head screwdriver, and close the door. CAUTION Be careful not to scratch or break the parts	
	2. Remove the 3 screws holding down the Top Table and remove the Top Table(2).	
	3. Disconnect the electrical connector(3) above the upper left door hinge To disconnect the connector(3) more easily, press the end of the hook(4) and pull connector. CAUTION Before doing the above, make sure that the unit is plugged out.	
	4. Disconnect the water tube (5) by pulling the tube fitting(6) apart as shown in the picture.	 

DISASSEMBLY AND REASSEMBLY

Part Name	How To Do	Descriptive Picture
Refrigerator Door	5-1. **Left door hinge** With a Philips head screwdriver, remove the ground screws (7) and remove the 3 hex head bolts(8).	
	5-2. **Right door hinge** At first, disconnect the LED housing (9) and with a Philips head screwdriver, remove the ground screws (7) and remove the 3 hex head bolts(8).	

Part Name	How To Do	Descriptive Picture
Refrigerator Door	6. Lift the door straightly up to remove. CAUTION Be careful not to drop the door.	
	7. With a Philips head screwdriver, remove the two screws (10) attatched to the lower left and right door hinges. With a wrench(10mm), remove the 2 flat head screws (11) attatched to the lower left and right door hinges. Remove the lower left and right door hinges (12).	

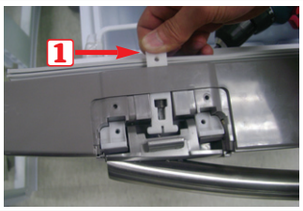
DISASSEMBLY AND REASSEMBLY

3-3) Door Handle Refrigerator

Part Name	How To Do	Descriptive Picture
Door Handle Fridge	1. Loose Set Screw with 0.1in Hex wrench and pull front the handle.	
	2. Remove the cover vinyl of door.	

DISASSEMBLY AND REASSEMBLY

3-4) Door Handle Freezer & Flex zone

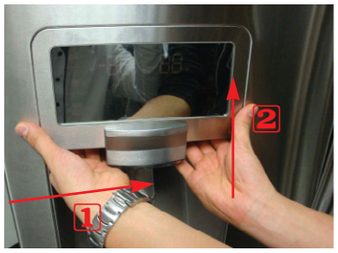
Part Name	How To Do	Descriptive Picture
Door Handle Freezer & Flex zone	1. Remove the Cap Door with a flat-blade(-) screwdriver. CAUTION Be careful not to scratch or break the parts	
	2.Remove 4 screws	
	3. Lift up the handle to have the Slider Handle (1) pushed back.	
	4. After having the Slider Handle (1) pushed back, screw up at the hole.	
	5. Remove the 4 Fixer Handle (2) by using the flat-blade(-) screwdriver.	
	6. Remove the door handle by lifting it up.	

DISASSEMBLY AND REASSEMBLY

3-5) Refrigerator Light

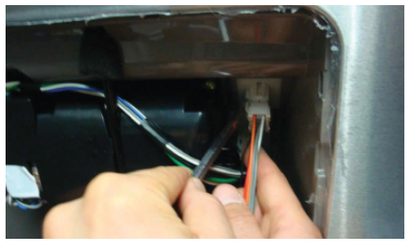
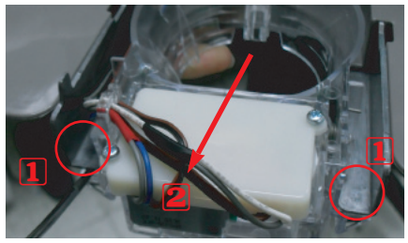
Part Name	How To Do	Descriptive Picture
Refrigerator Light	1. Remove the lamp cover by pushing a flat-blade screwdriver Into the hooks behind and pull them out. CAUTION Be careful not to scratch or break the parts CAUTION Before doing the above, make sure that the unit is plugged out.	
	2. Remove 3 screws. And separate the LED housing.	

3-6) Cover-Display & Water-Dispenser

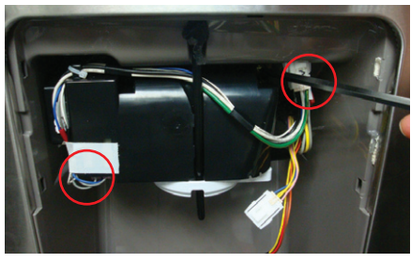
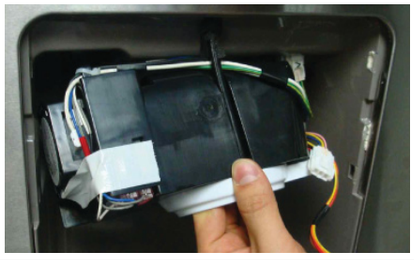
Part Name	How To Do	Descriptive Picture
Cover-Display	1. Remove a screw under the display cover.	
	2. Remove the display cover by pushing it to the right side and pulling it up.	

DISASSEMBLY AND REASSEMBLY

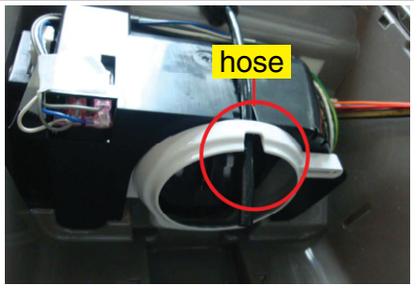
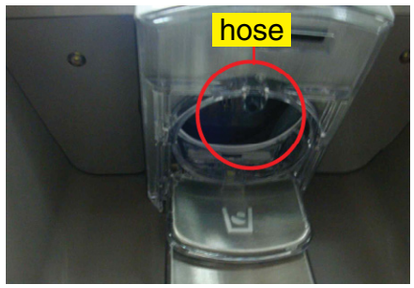
3-6) Cover-Display & Water-Dispenser

Part Name	How To Do	Descriptive Picture
Cover-Display	3. Disengage the housing connect of display cover.	
	4. Take hooks (1) away from the groove using flat-head screwdriver and pull it toward (2) to separate.	

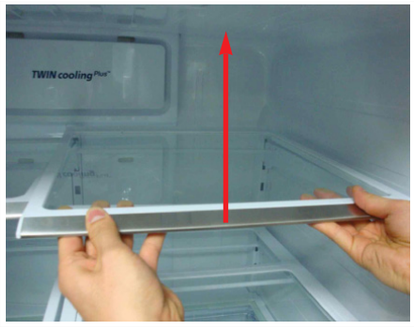
3-7) Water-Dispenser

Part Name	How To Do	Descriptive Picture
Water-Dispenser	1. Disengage the Housing Connectors by pushing a flat-blade screwdriver.	
	2. Remove 2 screws of the Case Ice Route Assy.	
	3. Pull the Case Ice Route Assy.	

DISASSEMBLY AND REASSEMBLY

Part Name	How To Do	Descriptive Picture
Water-Dispenser	1. Assembly shall be in order from the disassembly. Case-Ice and Route shall be assembled inside of hose. Otherwise, assemble cannot be accomplished.	 
	2. When assembling Cover-Display, first insert it from leftside and then assemble to rightside.(Check the wire inside.) and knock the display into the Case dispenser.	

3-8) Glass Shelf

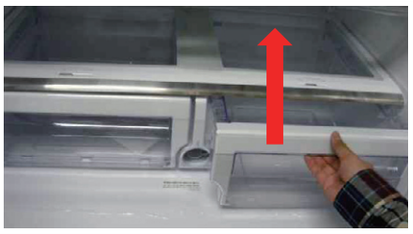
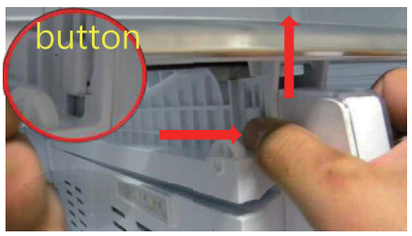
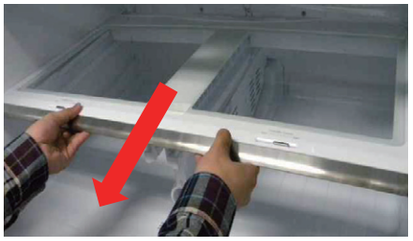
Part Name	How To Do	Descriptive Picture
Glass Shelf	Remove the shelf by lifting the front part of the shelf up and pulling it out.	

DISASSEMBLY AND REASSEMBLY

3-9) Foldable Glass Shelf

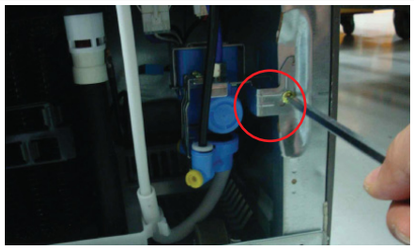
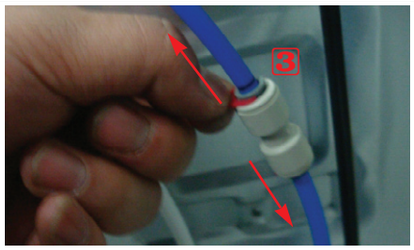
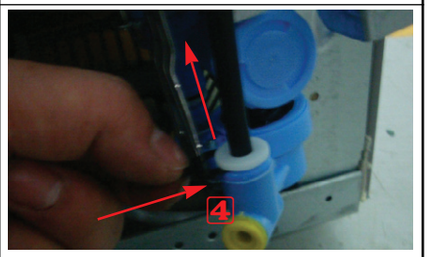
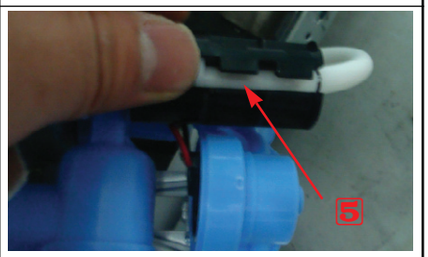
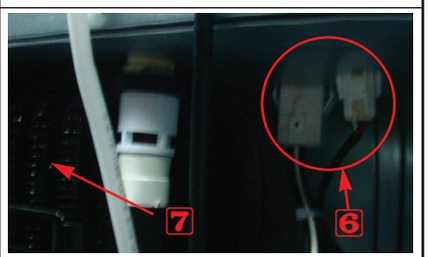
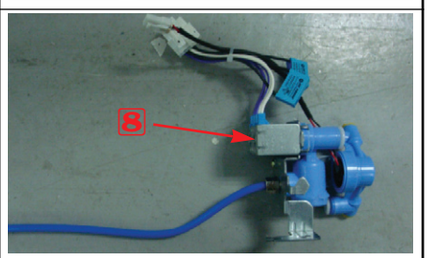
Part Name	How To Do	Descriptive Picture
Foldable Glass Shelf	1. Remove the Cap. 2. Remove 2 screws of the Folderble Glass Shelf.	

3-10) Vegetable & Fruit Drawers Shelf

Part Name	How To Do	Descriptive Picture
Vegetable & Fruit Shelf	1. Remove the vegetable & fruit drawer by pulling the roller part and lifting it up.	
	2. While pressing the button on the left of the shelf in the picture, lift up the Vegetable & Fruit Drawer Shelf. (Refer to the picture)	
	3. Remove the vegetable & fruit drawer shelf by pulling it out. (Refer to the picture)	

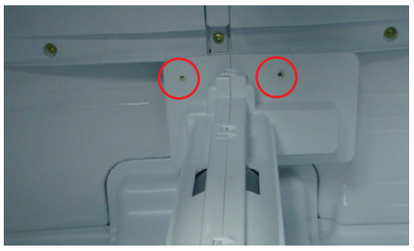
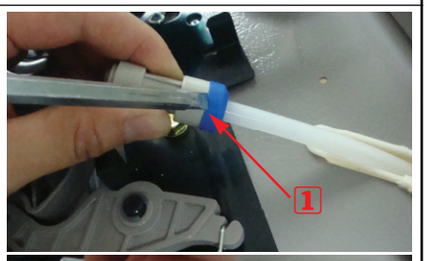
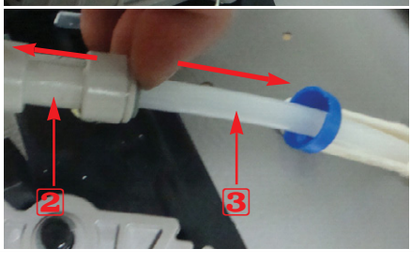
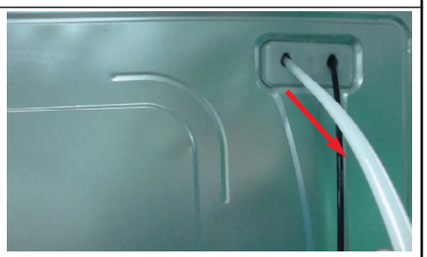
DISASSEMBLY AND REASSEMBLY

3-11) Water Valve

Part Name	How To Do	Descriptive Picture
Water Valve	One Water Tube is located in the machine compartment of the refrigerator. Before disassembling the Water Tube, take out the compressor cover. 1. Remove the water valve fixed by the screw.	
	2. Remove the tube clip(3) and disconnect the water hose by pushing the fiting apart.	
	3. Remove the tube clip(4) and disconnect the valve hose from Water Valve.	
	4. Open the Fixer hose(5) and disconnect the dispenser hose from Water Valve.	
	5. Disconnect the 2 Housing(6) beside Condenser(7).	
	6. Check the Water Valve(8). If it is not good, you must change it.	

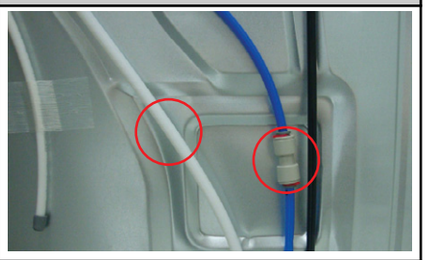
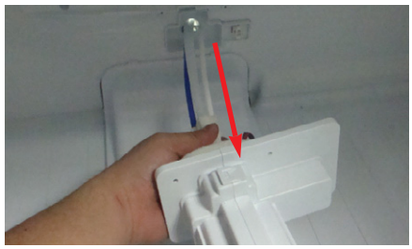
DISASSEMBLY AND REASSEMBLY

3-12) Case Water Filter

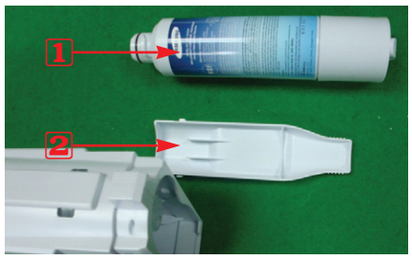
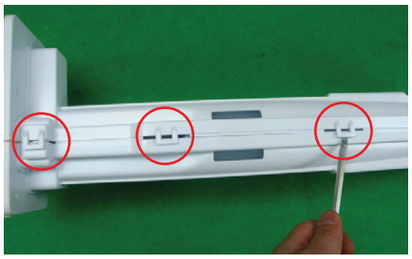
Part Name	How To Do	Descriptive Picture
Case Water Filter	Before disassembling the Case Water Filter take out water filter and drawers and shelves located on the Case Water Filter. (Refer to the “Vegetable & Fruit Shelf”)	
	1. Remove 2 screws.	
	2. a. Disconnect the water fixer tube(1) on left top table.(Refer to the “Refrigerator door”) push the flat-blade driver between fixer tube(1) and tube fitting(2). b. Disconnect the water tube(3) by pulling the tube fitting(2).	 
	3. Turn the refrigerator back and remove 4 screws and lose 5 hoses.	
	4. Pull the hose out.	

DISASSEMBLY AND REASSEMBLY

3-12) Case Water Filter

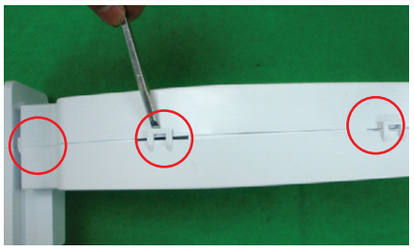
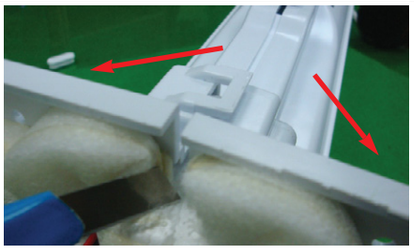
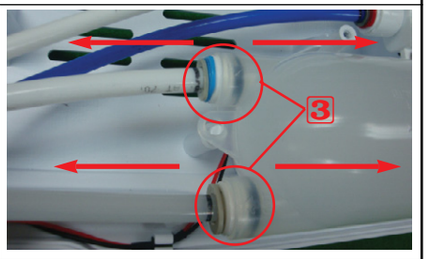
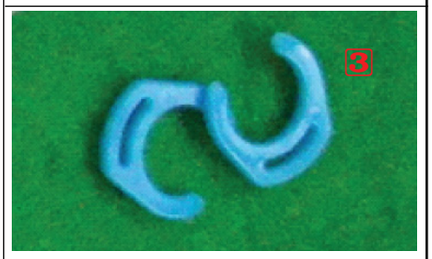
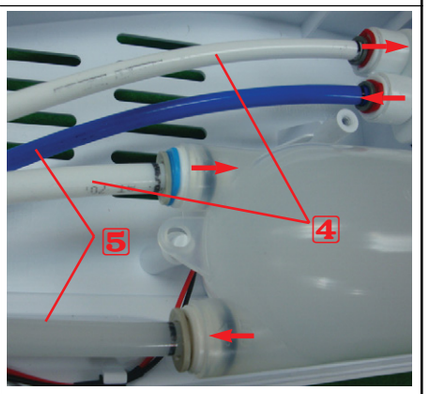
Part Name	How To Do	Descriptive Picture
Case Water Filter	5. Pull the two hose out from the water valve.(Refer to the “Water Valve”)	
	5. Pick the Case Water Filter out.	

3-13) Water Tank

Part Name	How To Do	Descriptive Picture
Water Tank	Before disassembling the Water Tank take the water filter(1) and water tray(2) out.	
	1. Remove 2 screws beside.	
	2. a. Lose the hooks by pushing the flat-blade driver.	

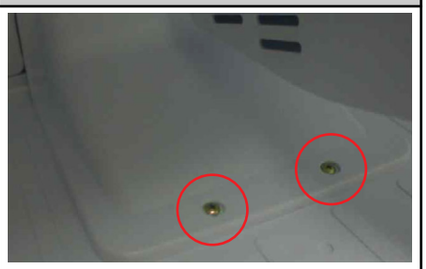
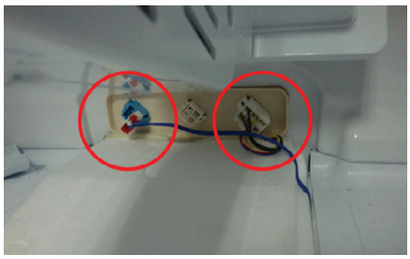
DISASSEMBLY AND REASSEMBLY

3-13) Water Tank

Part Name	How To Do	Descriptive Picture
Water Tank	b. Lose the hooks by pushing the flat-blade driver.	
	3. Cut the sponge stick on the Case Water tank. and divide Case Water Tank.	
	4.Remove the tube clips(3) and disconnect the water tank hoses by pulling the fitting tube.	 
	5. Be careful when you connect the hoses. White hoses(4) go to the In mark(→). Other hoses(5) go to the out mark(←).	

DISASSEMBLY AND REASSEMBLY

3-14) Motor Damper

Part Name	How To Do	Descriptive Picture
Motor Damper	1. Remove the 2 screws under the. water filter case and take off the cover damper(②).	
	2. Disengage 2 housing connector.	
	3. Take off the Motor Damper by pulling a flat-blade screwdriver .	

DISASSEMBLY AND REASSEMBLY

3-15) Water Filter (Assembly & Disassembly)

Part Name	How To Do	Descriptive Picture
Water Filter	1. Turn the water filter count-clockwise. (Refer to the picture)	
	2. Remove the water filter by pulling it. (Refer to the picture)	
	3. Push the water filter directly.	
	4. Turn the water filter clockwise until it locked.	

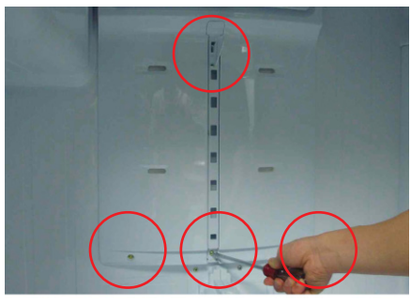
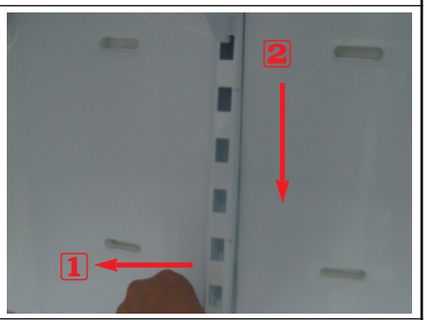
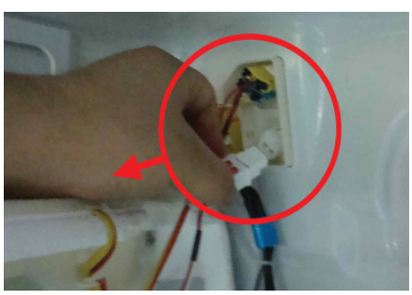
DISASSEMBLY AND REASSEMBLY

3-16) Vertical Hinged Section

Part Name	How To Do	Descriptive Picture
Vertical Hinged Section	1. Remove 2 screw cap parts with a flat-blade(-) screwdriver. (Refer to the picture) CAUTION Be careful not to scratch or break the parts	
	2. Unscrew 2 screws.	
	3. Disengage the internal housing connector of the vertical hinge.	
	4. Remove the vertical hinged section by lifting the vertical hinge up. (Refer to the picture)	

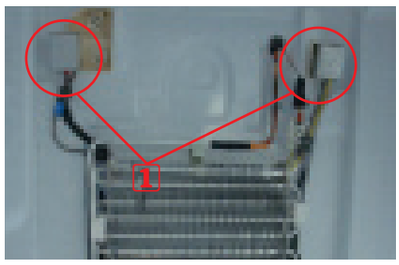
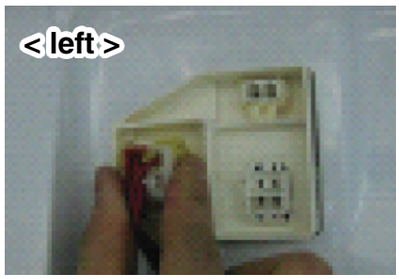
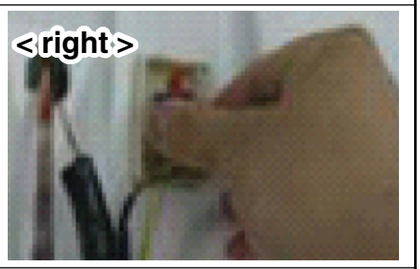
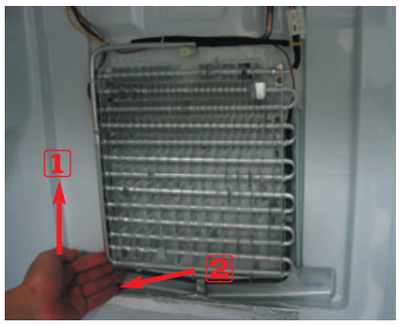
DISASSEMBLY AND REASSEMBLY

3-17) Evaporator Cover In Refrigerator

Part Name	How To Do	Descriptive Picture
Evaporator Cover In Refrigerator	1. Remove the angle cap with a flat-blade screwdriver. (Refer to the picture) CAUTION Be careful not to scratch or break the parts	
	2. Unscrew 4 screws.	
	3. Remove the the lower part of angle mid by pulling it out and pushing it down. (Refer to the picture)	
	4. Remove the hook by pulling it from the lower part and pushing the cover down. (Refer to the picture)	
	5. Disconnect the 2 housing connectors. (Refer to the picture)	

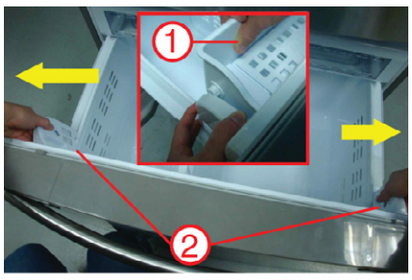
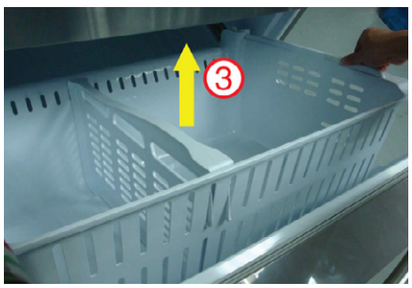
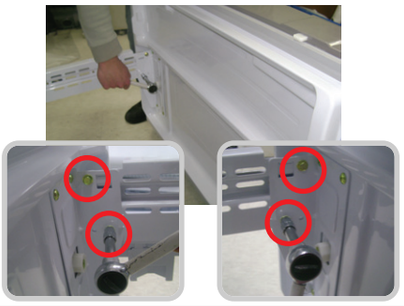
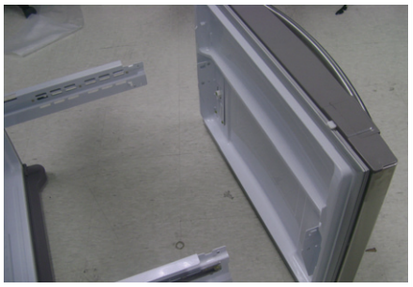
DISASSEMBLY AND REASSEMBLY

3-18) Evaporator In Refrigerator

Part Name	How To Do	Descriptive Picture
Evaporator In Refrigerator	1. Remove the the housing cover by pushing both lateral sides of the housing cover (1) and pulling it out. (Refer to the picture)	
	2. Disconnect the housing connector part on left side. (Refer to the picture)	
	3. Disconnect the housing connector on right side.	
	4. Remove the evaporator by lifting the bottom side of it up and pulling it out. (Refer to the picture)	

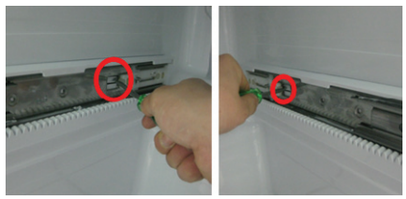
DISASSEMBLY AND REASSEMBLY

3-19) Freezer Door

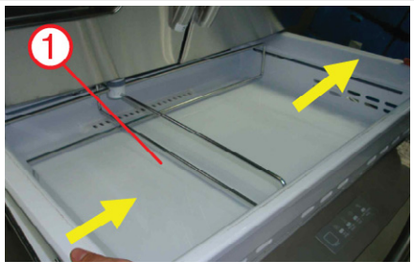
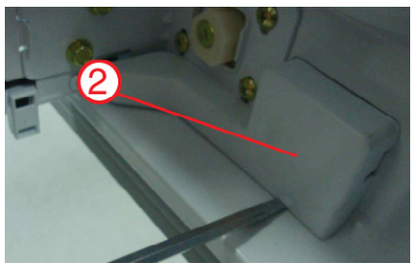
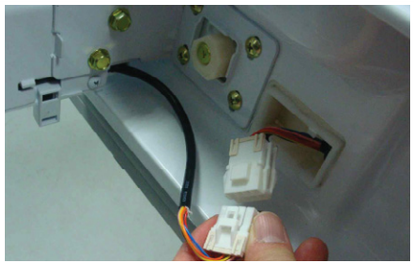
Part Name	How To Do	Descriptive Picture
Freezer Door	1. Pull the drawer open to full extension.	
	2. Remove the brackets(①) by pulling the them outside after separate the tilting Pocket (②).	
	3. Take out the lower basket(③) by lifting the basket up from rail system.	
	4. Unscrew 4 bolts. (2 bolts each on the both sides)	
	5. Lifting up the freezer door, remove the freezer door from the rail.	

DISASSEMBLY AND REASSEMBLY

3-19) Freezer Door

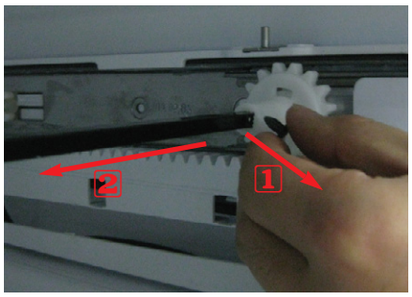
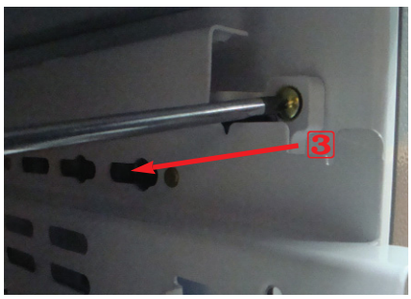
Part Name	How To Do	Descriptive Picture
Freezer Door	6. Press the both side hooks with flat-blade(-) screwdriver. (Refer to picture)	
	7. Remove the Freezer Rail by pulling it.	

3-20) Convertible Door

Part Name	How To Do	Descriptive Picture
Mid drawer	1. Pull the and remove the convertible room (②) by pulling it to your body with both hands. open to full extension.	
	2. Remove the cover housing (②) by a flat-blade screwdriver.	
	3. Disengage the housing.	

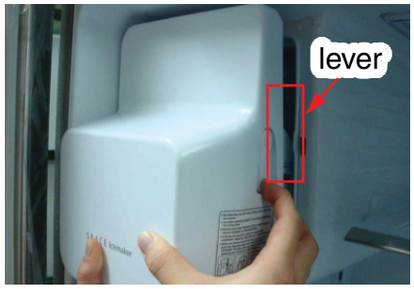
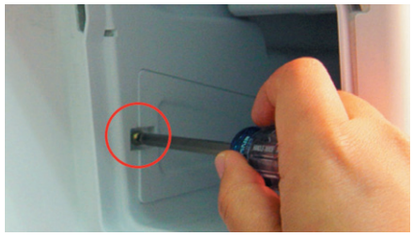
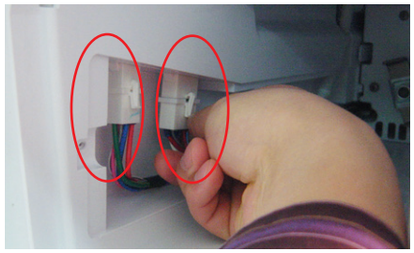
DISASSEMBLY AND REASSEMBLY

3-21) Flex Zone Door

Part Name	How To Do	Descriptive Picture
Mid drawer	4. Unscrew 4 bolts. (2 bolts each on the both sides)	
	5. Lifting up the convertible door. remove the convertible door from the rail.	
	6. Remove the shaft gear(2) by pull the pin(2) out.	
	7. Remove the screw and pull out The rail.	

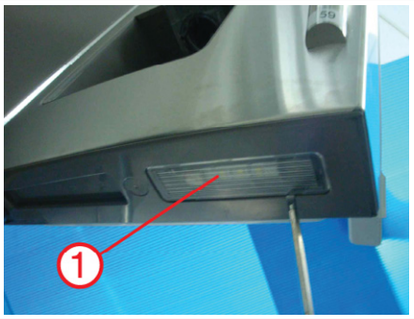
DISASSEMBLY AND REASSEMBLY

3-22) Ice-Maker

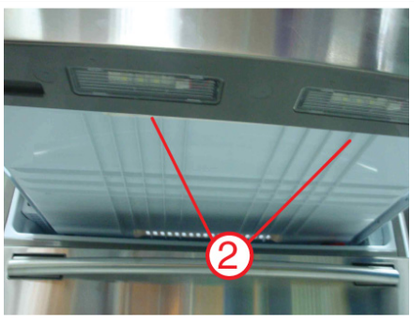
Part Name	How To Do	Descriptive Picture
Ice Maker	1. Pull the lever forward and take out the ice bucket.	
	2. Remove 1 screw of the Cover.	
	3. Disassemble the cover with a flat-blade(-) screwdriver and pull it out.	
	4. Disengage the 2 housing connectors.	
	5. Push the hook and pull the Ice-Maker out.	
	6. To disassemble, push the tab and pull the Case-Auger and the motor out.	

DISASSEMBLY AND REASSEMBLY

3-23) Flex Zone Light

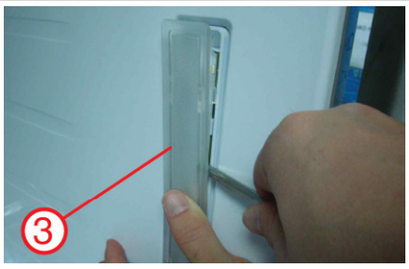
Part Name	How To Do	Descriptive Picture
Flex Zone Light	1. Remove the cover Flex zone lamp(①) by a flat-blade screwdriver.	
	2. Disengage the housing.	

3-24) Freezer Light

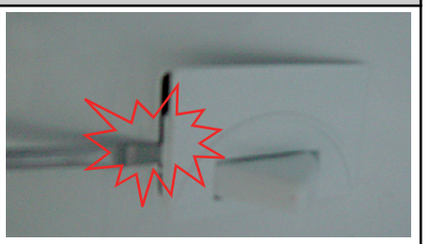
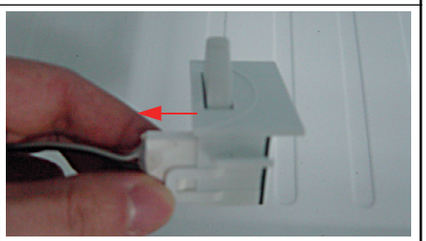
Part Name	How To Do	Descriptive Picture
Freezer Light	1. Remove the cover Freezer lamp(②)like the way disassembling the Flex zone lamp.	
	2. Disengage the housing.	

DISASSEMBLY AND REASSEMBLY

3-25) Side Light

Part Name	How To Do	Descriptive Picture
Refrigerator Light	1. Remove the cover Side lamp(③) by a flat-blade screwdriver.	
	2. Separate the Side lamp from the case.	
	3. Disengage the housing.	

3-26) Door Switch In Freezer

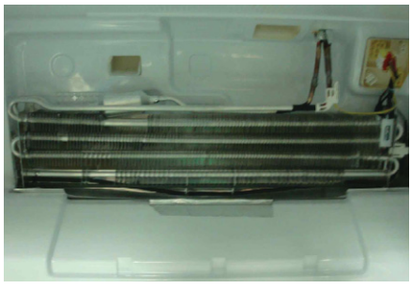
Part Name	How To Do	Descriptive Picture
Door Switch In Freezer	1. Remove the freezer drawer bin by using a flat-blade(-) screwdriver.(Refer to the picture)	
	2. Disconnect the housing connector part.	

DISASSEMBLY AND REASSEMBLY

3-27) Evaporator Cover In Freezer

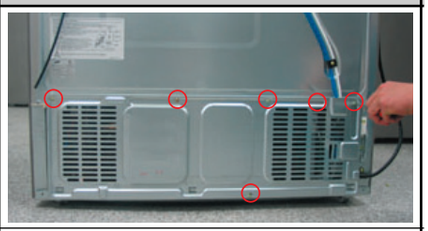
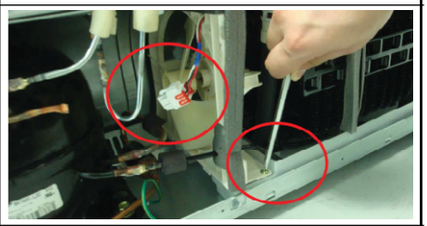
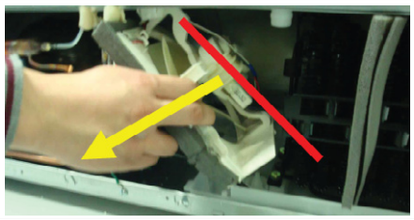
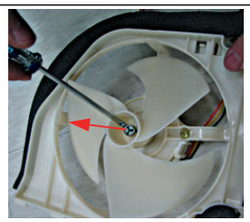
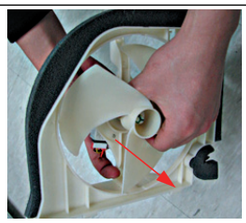
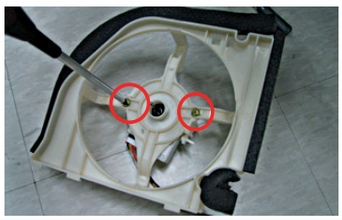
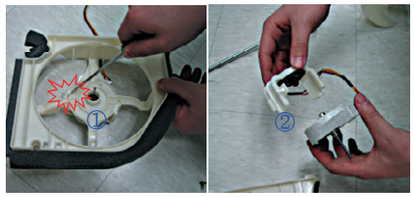
Part Name	How To Do	Descriptive Picture
Evaporator Cover In Freezer	1. Remove the freezer door and freezer drawer by pulling out the drawer and then unscrewing 2 screws.	
	2. Lift up the evaporator cover.	
	3. Disengage the 3 housing connectors and remove the evaporator cover.	

3-28) Evaporator In Freezer

Part Name	How To Do	Descriptive Picture
Evaporator In Freezer	1. Remove the housing connector part left one.	
	2. Remove the evaporator by pulling the lower part of the evaporator while lifting it up.	

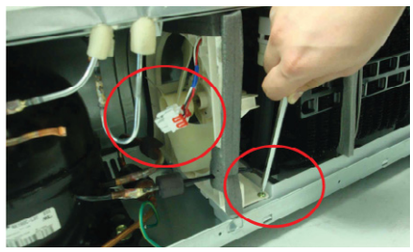
DISASSEMBLY AND REASSEMBLY

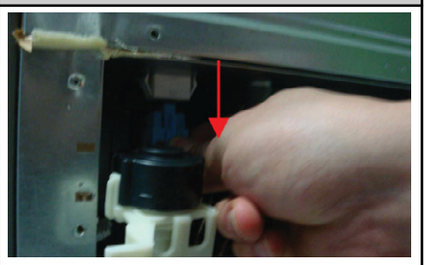
3-29) Machine Compartment

Part Name	How To Do	Descriptive Picture
Motor Fan	1. Unscrew 6 screws of cover compressor.	
	2. Remove 1 screw and disengae the housing connector. (Refer to the picture)	
	3. Remove the hooker of support circuit motor by lifting the hooker up and pulling it out.	
	4. Remove the screw with a flat-blade screwdriver. (Refer to the picture)	
	5. Remove the motor fan by pulling the fan out while graping the motor part. (Refer to the picture)	
	6. Unscrew 2 screws fixed in the motor.	
	7. Remove the hook of the motor cover with a flat-blade (-) screwdriver and then remove the motor.	

DISASSEMBLY AND REASSEMBLY

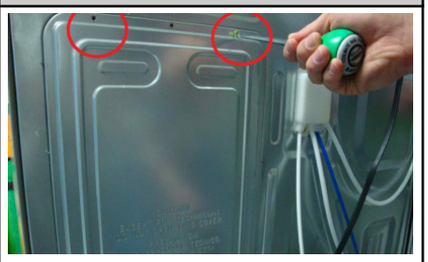
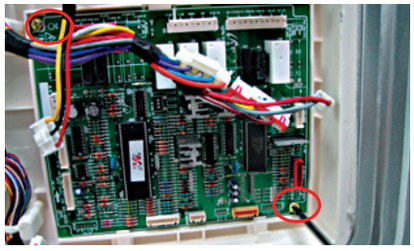
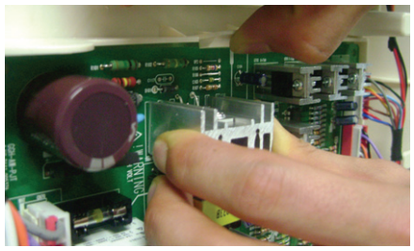
3-29) Machine Compartment

Part Name	How To Do	Descriptive Picture
Step Valve	1. Unscrew 1 screw fixed on left.	
	2. Disengage the housing connector.	

Part Name	How To Do	Descriptive Picture
Relay O/L	1. Disengage the housing connector.	
	2. Remove Cover Relay.	
	3. Remove the relay O/L with a flat-blade screwdriver. (Refer to the picture)	

DISASSEMBLY AND REASSEMBLY

3-30) Electric Box

Part Name	How To Do	Descriptive Picture
PBA Main	1. Remove the ground screw 8 attached to the upper left and right door hinges with a phillps screwdriver(+)	
	2. Disengage all housing connectors from the main PCB.	
	3. Remove the main PCB by pushing the lower part of the hook down.	
	4. Unscrew 2 PCB fixing screws.	
	5. Remove the main PCB by lifting the upper part of the hook up. (Refer to the picture)	
PBA SMPS	1. Remove the SMCS PCB by lifting the upper part of the hook up.	

AW3SM-EN2011.3.312:55PM페이지56 in

4. TROUBLESHOOTING

4-1) Function for failure diagnosis · · · · · 57

4-1-1. Test mode (manual operation / manual defrost function) · · · · · 57

4-1-2. Display function of Communication error · · · · · 58

4-1-3. Self-diagnostic function · · · · · 59

4-1-4. Display function of Load condition · · · · · 62

4-1-5. Exhibition mode setting function · · · · · 63

4-1-6. Option setting function · · · · · 64

4-1-7. Option TABLE · · · · · 66

4-2) Diagnostic method according to the trouble symptom(Flow Chart) · · · · · 67

4-2-1. If the trouble is detected by self-diagnosis · · · · · 69

4-2-2. If FAN does not operate · · · · · 80

4-2-3. If ICE Room Fan does not operate · · · · · 81

4-2-4. If FAN does not operate (Flex Room - FAN) · · · · · 82

4-2-5. If Ice Maker does not operate · · · · · 83

4-2-6. If defrost does not operate (F,R DEF Heater) · · · · · 84

4-2-7. If Power is not supplied · · · · · 85

4-2-8. If compressor does not operate · · · · · 86

4-2-9. When alarm sounds continuously without stop(related with buzzer sound) · · · · · 88

4-2-10. If Mid Drawer Panel PCB does not work normally · · · · · 90

4-2-11. When refrigerator ROOM Lamp does not light up · · · · · 91

4-2-12. If ICE Water is not supplied · · · · · 92

4-2-13. If Cubed or Crushed Ice is not supplied · · · · · 93

4-2-14. If Cover Ice Route Motor(Geard Motor) is not working normally · · · · · 94

4-2-15. If Inverter PCB Power is not supplied · · · · · 95

4-2-16. LED blinking frequency depending on protecting functions · · · · · 96

Spm internal diode voltage · · · · · 97

Inverter controller board connector location · · · · · 98

Inverter pcb circuit diagram · · · · · 99

4-3-1. inrush current protecting circuit · · · · · 100

4-3-2. power source(hybrid ic) · · · · · 100

4-3-3. location sensing resistance area · · · · · 101

4-3-4. sensing current area · · · · · 101

4-3-5. comp operating signal area · · · · · 102

4-3-6. bootstrap charging area · · · · · 102

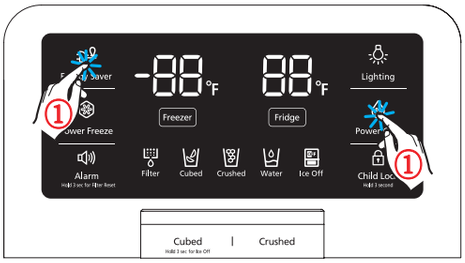
TROUBLESHOOTING

4-1) Function for failure diagnosis

4-1-1. Test mode (manual operation / manual defrost function)

- If Energy Saver Key + Power Cool Key on the front of panel are pressed simultaneously for 8 seconds , it will be changed to the test mode and all displays on the front of panel will be off.
- If any key on the front of panel is pressed within 15 seconds after the test mode, it will be operated as below sequence :
  Manual operation1(FF 1) Manual operation2(FF 2) Manual operation3(FF 3) -> manual detrost of fresh food and freeser compartments(fd) -> cancel(Display all off)
- If any key on the front of panel is not pressed within 15 seconds after the test mode, the test mode will be canceled and it will be returned to previous mode.

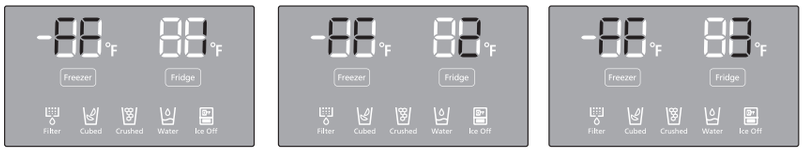
1) Manual operation function



① Energy Saver Key + Power Cool Key are pressed simultaneously for 8 seconds, (displays are all off)
It will be changed to the test mode (manual operation) by pressing any key

1-1) If any key is pressed once in test mode, blinks "FF-1" on the display and it indicates the refrigerator has entered the manual operation. At this moment, buzzer beeps as an alarm.
1-2) If any key is pressed once at the manual operation1 status, FF-2 will be displayed.
And if any key is pressed one more time, FF-3 will be displayed. FF-2 and FF-3 means manual operation2 and 3 separately. These 3 functions operate with different RPM of COMP.
1-3) If manual operation is selected, compressor will run at once without 7 minutes delay in any mode. If the refrigerator is on the defrost cycle at the moment, defrost will be finished and manual operation will begin.
(Be careful if manual operation get started at the moment of compressor off, over load could be occurred)

Compulsion working 1 : 3600RPM | Compulsion working 2 : 2450RPM | Compulsion working 3 : 2200RPM



1-4) If manual operation works, compressor & f-fan operate continuously for 24 hours and fresh food compartment will be controlled by the setting temperature.
1-5) When the manual operation runs, setting temperature will be selected automatically as below: freezer compartment -8℉(-22℃), fresh food compartment 34℉(1℃).
1-6) During manual operation, Power Freeze & Power Cool function will not be worked.
If a function is selected, the power function icon of the selected function will be off automatically after 10 seconds.
1-7) Manual operation can be canceled by turning on the appliance after power off(reset) or choosing the step 3) test cancel mode.
1-8) Alarm(0.25 sec ON/ 0.75 sec OFF) will beep continuously until manual operation is completed and there is no function to make the sound stop.

2) Simultaneous manual defrost(fresh food and freezer compartments) function

2-1) If any key is pressed one more time during manual operation(Fresh food and freezerpartment), "Fd" shows in the display and then manual operation will be canceled at once and fresh food compartment will be defrosted.

2-2) At this moment, alarm beeps for 3 seconds (0.1 sec ON/ 1 sec OFF) during manual defrost function of fresh food and freezer compartment.

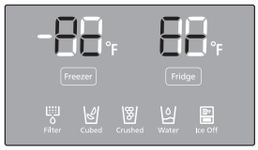
3) Test cancel mode

3-1) During the simultaneous defrosting of fresh food and freezer compartments simultaneously, if the display panel change to the test mode and test button is pressed one more time, defrosting of fresh food and freezer compartments will be canceled at the same time and will return to the normal operation.
Or, all test functions will be canceled by turning main power ON and OFF.

4-1-2. Display function of Communication error

1) Display function when Panel ↔ MAIN MICOM communication has error

1-1) If there is no answer for 10 seconds after the panel micom received the requirement of communication, "Pc - Er" display on the panel PCB will be ON/OFF alternately until the communication error is canceled. (0.5 sec ALL ON, 0.5 sec ALL OFF alternately)



1-2) “Pc - Er” display on the Flex Zone Temp. Display will be ON/OFF alternately until the communication error is canceled. (0.5 sec ALL ON, 0.5 sec ALL OFF alternately)

2) Display function when Panel ↔ MAIN MICOM OPTION has error

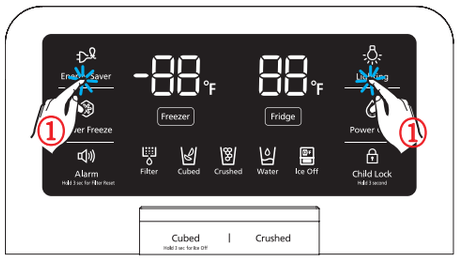
2-1) ”OP - Er” code is repeatedly ON/OFF until Option error settles down.

TROUBLESHOOTING

4-1-3. Self-diagnostic function

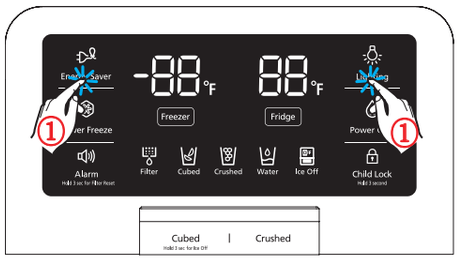
1) Self-diagnostic function in the Initial power ON

1-1) Micom operates self-diagnostic function to check the temperature sensor condition within 1 second when the refrigerator turned On initially.
1-2) If bad sensor is detected by the self-diagnostic function, the applicable display LED will blink for 0.5 sec.
At this moment, there is no beep sound.(Refer to self-diagnostic CHECK LIST)
1-3) Self-diagnostic button is recognized only when the error is displayed by the bad sensor. Display does not operate normally but temperature control will be controlled by the emergency operation.
1-4) When the error is detected by self-diagnosis, the error can be canceled automatically if all troubled sensors are corrected or Self-diagnostic function key (Energy Saver Key + Lighting Key) are pressed simultaneously for 8 seconds.
(Return to normal display mode)



① If Energy Saver Key + Lighting Key are pressed simultaneously for 8 seconds, the error mode by self-diagnosis will be canceled.

2) Self-diagnostic function during normal operation



① If Energy Saver Key + Lighting Key are pressed simultaneously for 8 seconds, the error mode by self-diagnosis will be canceled.

2-1) If Energy Saver Key + Lighting Key are pressed simultaneously for 6 seconds during normal operation, the temperature setting display will operate for 2 seconds (ON/OFF 0.5sec each).
If Energy Saver Key + Lighting Key are pressed simultaneously for 8 seconds (including above 2 seconds), self-diagnostic function will be selected.
2-2) At this moment, self-diagnostic function will be returned with buzzer sound 'ding-dong'.
If there is an error, display of error will be operated for 30 seconds and then return to normal condition whether problem is corrected or not.
(Refer to self-diagnosis CHECK LIST)
2-3) Input by button is not accepted during self-diagnostic function.

TROUBLESHOOTING

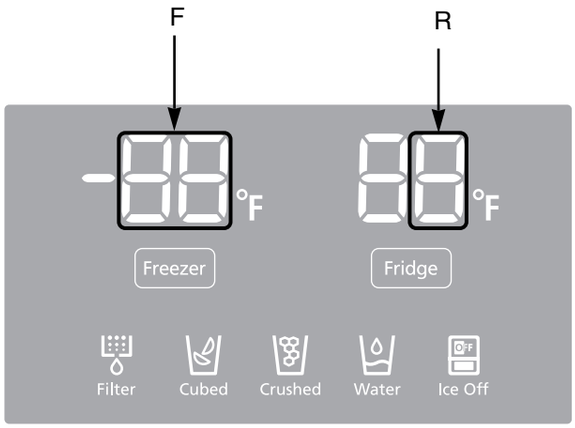
∗ Self-diagnostics check list

LED F	LED R	Item	Trouble contents	Diagnostic method
01		FZ-Sensor Error	Display error : separation of sensor housing part, contact error, disconnection, short circuit. Display error of detecting temperature of sensor : more than 149°F(+65℃) or less than -58°F(-50℃)	The voltage of MAIN PCB CN30- "3"↔N76-"1": shall be between 4.5V~1.0V
02		FF-Sensor Error		The voltage of MAIN PCB CN30- "6"↔N76-"1": shall be between 4.5V~1.0V
04		FZ-DEF-Sensor Error		The voltage of MAIN PCB CN30- "5"↔N76-"1": shall be between 4.5V~1.0V
05		FF-DEF-Sensor Error		The voltage of MAIN PCB CN30- "8"↔N76-"1": shall be between 4.5V~1.0V
06		Ambient-Sensor Error		The voltage of MAIN PCB CN78- "8"↔CN78-"12": shall be between 4.5V~1.0V
07		Flex room-Sensor Error		The voltage of MAIN PCB CN78- "9"↔CN76-"1": shall be between 4.5V~1.0V
13		Humidity-Sensor Error	Separation of sensor housing part, contact error, disconnection, short circuit	The voltage of MAIN PCB CN30- "1"↔CN30-"7": shall be between 4.5V~1.0V
14		Ice Maker(FF) Sensor Error	Display error : separation of sensor housing part, contact error, disconnection, short circuit. Display error of detecting temperature of sensor : more than 149°F(+65℃) or less than -58°F(-50℃)	The voltage of MAIN PCB CN90- "1"↔CN90-"7": shall be between 4.5V~1.0V
15		Ice Room Sensor Error		The voltage of MAIN PCB CN78- "10"↔CN78-"1": shall be between 4.5V~1.0V
21	0E	FZ-FAN Error	Display error during operation of applicable fan motor : Feed back signal line contact error, motor wire separation, motor error	The voltage of MAIN PCB CN76- "3"(Yellow)↔ CN76-"1"(Gray): shall be between 7V~12V
22		FF-FAN Error	Display error during operation of applicable fan motor : Feed back signal line contact error, motor wire separation, motor error	The voltage of MAIN PCB CN76- "4"(Orange)↔ CN76-"1"(Gray): shall be between 7V~12V
23		C-FAN Error	Display error during operation of applicable fan motor : Feed back signal line contact error, motor wire separation, motor error	The voltage of MAIN PCB CN76- "5"(Sky-blue)↔ CN76-"1"(Gray): shall be between 7V~12V
24		FZ-DEF Error	Separation of freezer compartment defrost heater housing part, contact error, disconnection, short circuit or temperature fuse error. Display error : the defrosting does not finish though fresh food compartment defrost is heating continuously for more than 70 minutes.	After separating MAIN PCB CN70 wire from PCB, resistance value between CN70 Brown ↔ CN70 Gray shall be 63(230) ohm± 7%.(Resistance value is varied by input power) 0 ohm : heater short, ∞ ohm : wire/bimetal open (Must power off)

TROUBLESHOOTING

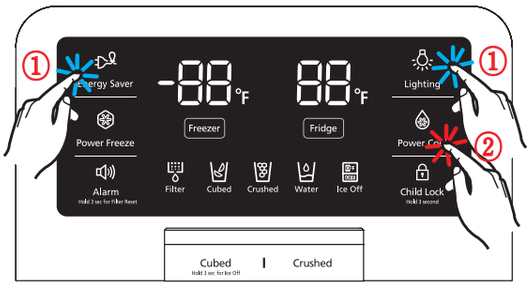
∗ Self-diagnostics check list

LED		Item	Trouble contents	Diagnostic method
F	R			
25		FF-DEF Error	Separation of fresh food compartment defrost heater housing part, contact error, disconnection, short circuit or temperature fuse error. Display error : the defrosting does not finish though fresh food compartment defrost is heating continuously for more than 80 minutes.	After separating MAIN PCB CN70 wire from PCB, resistance value between CN70 White ↔ CN70 Gray shall be 120(440) ohm± 7%.(Resistanc e value is varied by input power) 0 ohm : heater short, ∞ ohm : wire/bimetal open (Must power off)
28		Flex Zone-Damper-Heater Error	Display error when open error is detected by damper heater : separation of Damper Heater housing part, contact error, disconnection, short circuit	After separating MAIN PCB CN77 wire from PCB, resistance value between Black ↔ Brown wire shall be 135 ohm± 7%. 0 ohm : heater short, ∞ Ohm : wire / bimetal Open.
39		Ice Maker(FF) Function Error	Display error when open error is detected by Heater : separation of Ice Pipe Heater housing part, contact error, disconnection, short circuit.	After changing the Ice Maker(R), plug the refrigerator power code again, and check the operation.
40		Ice Room-FAN Error	Display error when the Ice Maker(FZ) kit operate moving ice over 3 times or it is not leveled.	The voltage of MAIN PCB CN76-"2"(Black) ↔ CN76-"1" (Gray): shall be between 7V~12V
41		Panel ↔ Main Communication Error	Display "41 - E" in the panel with alarm : MICOM MAIN ↔ PANEL communication error. OP-Er is displayed when the Option is not equivalent with the right value.	Actually, If there is not a problem, it is desirable to replace Main and Panel PCB With the oscilloscope after a cable problem confirming.



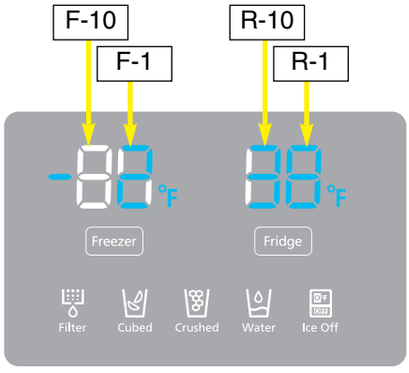
TROUBLESHOOTING

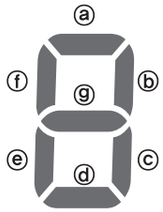
4-1-4. Display function of Load condition



① If Energy Saver Key + Lighting key are pressed simultaneously for 6 seconds, ALL ON/OFF will blink with 0.5interval for 2 seconds.
② If take the finger off from above keys and press Power Cool Key, load condition mode will be started.

1) If Power Energy Saver Key + Lighting key are pressed simultaneously for 6 seconds during normal operation, the temperature setting display of fresh food and freezer compartments will blink ALL ON/OFF with 0.5 for 2 seconds.
2) At this moment, If Power Cool Key after Energy Saver Key + Lighting Key is pressed, load condition display mode will be returned with alarm.
3) Load condition display mode shows the load that micom signal is outputting.
However, It means that micom signal is outputting, it does not mean whether load is operating or not. That is to say that though load operation is displayed, load could not be operated by actual load error or PCB relay error etc. (This function would be applied at A/S.)
4) Load condition display function will maintain for 30 seconds and then normal condition will be returned automatically.
5) Load condition display is as below. Only the load control LED will blink with 0.5interval in "Display LED"



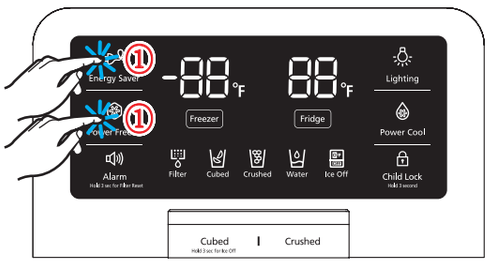


TROUBLESHOOTING

∗ Load mode Check list

Display LED	Display contents	Operation contents
R-1-ⓐ	R-FAN High	When FF compartment FAN operates with high speed, applicable LED ON
R-1-ⓑ	R-FAN Low	When FF compartment FAN operates with low speed, applicable LED ON
R-1-ⓒ	R-DEF Heater	When FF compartment defrost heater operates, LED ON
R-1-ⓓ	Start Mode	When refrigerator is plugged initially, LED ON
R-1-ⓔ	Overload condition	When ambient temperature is more than 93℉(34℃), LED ON
R-1-ⓕ	Low temperature condition	When ambient temperature is less than 72℉(22℃), LED ON
F-1-ⓔ,ⓕ ALL LED Off	Normal Condition	When ambient temperature is between 73℉(23℃) and 91℉(33℃)
R1-ⓖ	Exhibition Mode	LED ON at the display mode.
F-1-ⓐ	COMP.	When COMP operates, applicable LED ON.
F-1-ⓑ	F-FAN High	When FZ compartment FAN operates with high speed, applicable LED ON
F-1-ⓒ	F-FAN Low	When FZ compartment FAN operates with low speed, applicable LED ON
F-1-ⓓ	F-DEF Heater	When FZ compartment defrost heater operates, LED ON
F-1-ⓔ	Mide Drawer Room	When Flex Zone FAN operates, LED ON
F-1-⑧	Dispenser Heater	When Dispenser Heater operates, applicable LED ON.
R-10-ⓐ	Mide Drawer Room Damper Open	When damper open, applicable LED ON
R-10-ⓑ	R-valve Open	When the R-valve operates LED ON
R-10-ⓒ	C-FAN High	When C-FAN operates with high speed, applicable LED ON
R-10-ⓕ	C-FAN Low	When C-FAN operates with low speed, applicable LED ON
F-10-ⓐ	Water Tank Heater	When Water Tank Heater operates, applicable LED ON.
F-10-ⓑ	F-valve Open	When the F-valve operates LED ON
F-10-ⓓ	Ice Room-FAN High	When Ice Room-FAN operates with high speed, applicable LED ON
F-10-ⓔ	Ice Room-FAN Low	When Ice Room-FAN operates with low speed, applicable LED ON
F-10-ⓖ	French Heater	When French Heater operates, applicable LED ON

4-1-5. Cooling Off mode setting function



① If Energy Saver Key + Power freeze Key are pressed for 3 seconds, Cooling Off mode will be started.

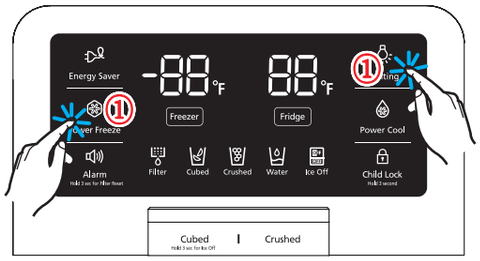
1) If Energy Saver Key + Power freeze are pressed simultaneously for 3 seconds during normal operation, Cooling Off mode will be started with buzzer sound(ding-dong).
2) If above Energy Saver Key + Power freeze Key are pressed one more time, Cooling Off mode will be canceled.
3) If Cooling Off mode is selected, blinks "OF-OF" on the temperature setting display of the panel and it indicates the refrigerator has entered the Cooling Off mode.
4) During Cooling Off mode, if fresh food and freezer compartments sensors are higher than 149℉(65℃) Cooling Off mode will be canceled automatically and freezing operation will be returned.
   (There is no buzzer sound when the Cooling Off mode is canceled by the temperature)
5) Operation contents of Cooling Off mode
   - Display, Fan motor and etc operate normally, not to operate compressor only.
   - Defrost is not operated. (including french heater)
   - Display function of the initial real temperature is finished.
   - Under the condition of Cooling Off mode, Cooling Off mode will be operated when Power On after Power OFF.

TROUBLESHOOTING

4-1-6. Option setting function

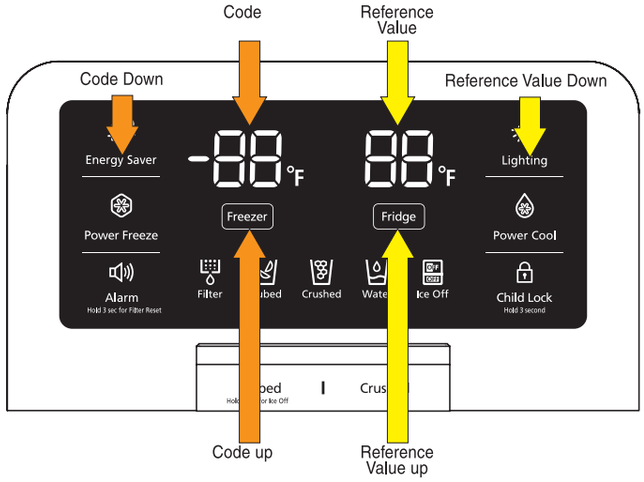
- If Power freeze Key + lighting Key are pressed simultaneously for 12 seconds during normal operation, fresh food and freezer compartments temperature display will be changed to option setting mode.

KEY operation method for changing to option mode



① If Freezer Key+ lighting Key are pressed simultaneously for 12 seconds, option setting mode will be started.

KEY control method after converting to option mode

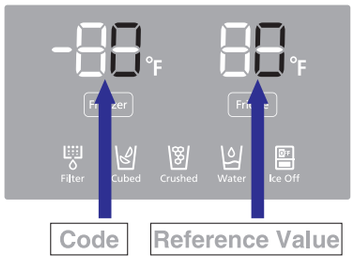


∗ Key control in option mode

Energy Saver Key	Code Down key
Freezer Key	Code Up key
Lighting key	Reference Value down key
Fridge key	Reference Value Up key

- If the display changes to option setting mode, all displays will be off except freezer and fridge compartments temperature display as below.
  (Fresh food and freezer compartments case will be explained only because all options are operated with the same method according to the option table.)

TROUBLESHOOTING



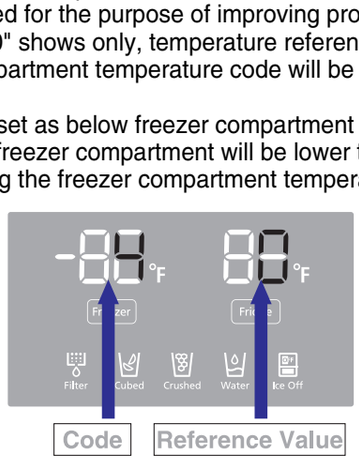
1) For example, if you want to change freezer compartment standard temperature to -4℉(-2°C) by operating option, do as below. This function is for changing the standard temperature.
In -2℉(-19°C) of current temperature of freezer compartment, if you make the temperature lower to -4℉(-2°C) by the option, the standard temperature would be controlled -6℉(-21°C)
Therefore, if you change the setting of temperature option to -2℉(-19°C) on the panel, the appliance will be operated with -6℉(-21°C). It means that standard temperature is controlled -4℉(-2°C) less than setting temperature in the display.

NOTE

Basically, all the data in option has cleared from the factory.
Therefore, almost all setting value are "0".
But, some setting values could be changed for the purpose of improving performmance.
You need to check the product manual and/or specification.

2) After changing to the option mode, fresh food compartment "0" , freezer compartment "0" will be displayed. (Basically fresh food compartment "0", freezer "0" would be set at shipping process, but setting value could be changed for the purpose of improving product at mass producing process.)
- If fresh food compartment "0" shows only, temperature reference value of freezer compartment will be set and current freezer compartment temperature code will be displayed on the freezer temperature display.

3) If freezer compartment "4" is set as below freezer compartment code after fresh food compartment "0 is set, standard temperature of freezer compartment will be lower than -4℉(-2.0°C).
(Refer to the picture "changing the freezer compartment temperature")



: If you wait for 20 seconds after completing the setting, MICOM will save the setting value to the EEPROM and normal display will be returned and the option setting mode will be canceled.

4) Option changing method as above is the same as all RF4287***** model.
5) By the same method as above, it is possible to control the fresh food compartment temperature, water supply, ice-maker harvest temperature/time, defrost return time, hysteresis by temperature, notch gap by temperature etc.
6) Option function is set in the EEPROM at shipping process in the factory.
You would better not to change the option of your own.
Completing the setting is that option function return to normal display after 20 seconds.
Do not turn off the appliance before returning to the normal display mode.

NOTE

Option setting function exists in the other items.
We will skip the explanation of the other functions by the option because it is associated with refrigerator control function and is not needed at SERVICE.
(Please do not set the other options except above SERVICE Manual.)

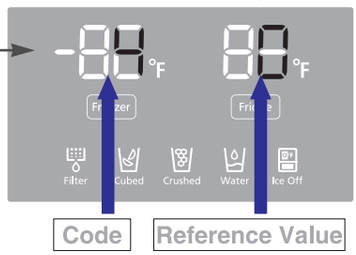
TROUBLESHOOTING

4-1-7. Option TABLE

1) Temperature changing table of freezer compartment

Set item	Freezer Temp Shift
MODEL	RF4287***
Reference Value	Fridge Room 7-SEG
	0

Setting value FZ compartment Code	Temp. compensation
0	0°F(0.0℃)
1	-1°F(-0.5℃)
2	-2°F(-1.0℃)
3	-3°F(-1.5℃)
4	-4°F(-2.0℃)
5	-5°F(-2.5℃)
6	-6°F(-3.0℃)
7	-7°F(-3.5℃)
8	+1°F(+0.5℃)
9	+2°F(+1.0℃)
10	+3°F(+1.5℃)
11	+4°F(+2.0℃)
12	+5°F(+2.5℃)
13	+6°F(+3.0℃)
14	+7°F(+3.5℃)
15	+8°F(+4.0℃)



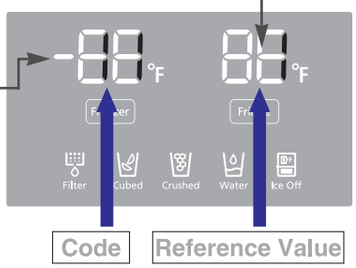
ex) If you want to change the freezer standard temperature to -4°F(-2°C)

2) Temperature changing table of fresh food compartment

Set item	Freezer Temp Shift
MODEL	RF4287***
Reference Value	Fridge Room 7-SEG
	1

Setting value FZ compartment Code	Temp. compensation
0	0°F(0.0℃)
1	-1°F(-0.5℃)
2	-2°F(-1.0℃)
3	-3°F(-1.5℃)
4	-4°F(-2.0℃)
5	-5°F(-2.5℃)
6	-6°F(-3.0℃)
7	-7°F(-3.5℃)
8	+1°F(+0.5℃)
9	+2°F(+1.0℃)
10	+3°F(+1.5℃)
11	+4°F(+2.0℃)
12	+5°F(+2.5℃)
13	+6°F(+3.0℃)
14	+7°F(+3.5℃)
15	+8°F(+4.0℃)

ex) If you want to change the freezer compartment standard temperature to 4°F(2°C)



TROUBLESHOOTING

4-2) Diagnostic method according to the trouble symptom(Flow Chart)

DATA1.Temperature table
Resistance value and MICOM port voltage of sensor according to the temperature
SENSOR CHIP : based on PX41C, PX41C, 502AT/ 103**(ICE MAKER SENSOR(MOLD)/FULL UP, 20Kohm
(Actual measurement = value of the table below X 2)

˚C	˚F	Voltage	Resistance	˚C	˚F	Voltage	Resistance	˚C	˚F	Voltage	Resistance
-50	-58	4.694	153319	-5	23	3.107	16419	40	104	1.153	2997
-49	-56.2	4.677	144794	-4	24.8	3.057	15731	41	105.8	1.124	2899
-48	-54.4	4.659	136798	-3	26.6	3.006	15076	42	107.6	1.095	2805
-47	-52.6	4.641	129294	-2	28.4	2.955	14452	43	109.4	1.068	2714
-46	-50.8	4.622	122248	-1	30.2	2.904	13857	44	111.2	1.040	2627
-45	-49	4.602	115631	0	32	2.853	13290	45	113	1.014	2543
-44	-47.2	4.581	109413	1	33.8	2.802	12749	46	114.8	0.988	2462
-43	-45.4	4.560	103569	2	35.6	2.751	12233	47	116.6	0.963	2384
-42	-43.6	4.537	98073	3	37.4	2.700	11741	48	118.4	0.938	2309
-41	-41.8	4.514	92903	4	39.2	2.649	11271	49	120.2	0.914	2237
-40	-40	4.490	88037	5	41	2.599	10823	50	122	0.891	2167
-39	-38.2	4.465	83456	6	42.8	2.548	10395	51	123.8	0.868	2100
-38	-36.4	4.439	79142	7	44.6	2.498	9986	52	125.6	0.846	2036
-37	-34.6	4.412	75077	8	46.4	2.449	9596	53	127.4	0.824	1973
-36	-32.8	4.385	71246	9	48.2	2.399	9223	54	129.2	0.803	1913
-35	-31	4.356	67634	10	50	2.350	8867	55	131	0.783	1855
-34	-29.2	4.326	64227	11	51.8	2.301	8526	56	132.8	0.762	1799
-33	-27.4	4.296	61012	12	53.6	2.253	8200	57	134.6	0.743	1745
-32	-25.6	4.264	57977	13	55.4	2.205	7888	58	136.4	0.724	1693
-31	-23.8	4.232	55112	14	57.2	2.158	7590	59	138.2	0.706	1642
-30	-22	4.199	52406	15	59	2.111	7305	60	140	0.688	1594
-29	-20.2	4.165	49848	16	60.8	2.064	7032	61	141.8	0.670	1547
-28	-18.4	4.129	47431	17	62.6	2.019	6771	62	143.6	0.653	1502
-27	-16.6	4.093	45146	18	64.4	1.974	6521	63	145.4	0.636	1458
-26	-14.8	4.056	42984	19	66.2	1.929	6281	64	147.2	0.620	1416
-25	-13	4.018	40938	20	68	1.885	6052	65	149	0.604	1375
-24	-11.2	3.980	39002	21	69.8	1.842	5832	66	150.8	0.589	1335
-23	-9.4	3.940	37169	22	71.6	1.799	5621	67	152.6	0.574	1297
-22	-7.6	3.899	35433	23	73.4	1.757	5419	68	154.4	0.560	1260
-21	-5.8	3.858	33788	24	75.2	1.716	5225	69	156.2	0.546	1225
-20	-4	3.816	32230	25	77	1.675	5039	70	158	0.532	1190
-19	-2.2	3.773	30752	26	78.8	1.636	4861	71	159.8	0.519	1157
-18	-0.4	3.729	29350	27	80.6	1.596	4690	72	161.6	0.506	1125
-17	1.4	3.685	28021	28	82.4	1.558	4526	73	163.4	0.493	1093
-16	3.2	3.640	26760	29	84.2	1.520	4369	74	165.2	0.481	1063
-15	5	3.594	25562	30	86	1.483	4218	75	167	0.469	1034
-14	6.8	3.548	24425	31	87.8	1.447	4072	76	168.8	0.457	1006
-13	8.6	3.501	23345	32	89.6	1.412	3933	77	170.6	0.446	978
-12	10.4	3.453	22320	33	91.4	1.377	3799	78	172.4	0.435	952
-11	12.2	3.405	21345	34	93.2	1.343	3670	79	174.2	0.424	926
-10	14	3.356	20418	35	95	1.309	3547	80	176	0.414	902
-9	15.8	3.307	19537	36	96.8	1.277	3428	81	177.8	0.404	877
-8	17.6	3.258	18698	37	98.6	1.253	3344	82	179.6	0.394	854
-7	19.4	3.208	17901	38	100.4	1.213	3204	83	181.4	0.384	832
-6	21.2	3.158	17142	39	102.2	1.183	3098	84	183.2	0.375	810

AW3SM-EN2011.3.312:55PM페이지68 in

4-2) Diagnostic method according to the trouble symptom(Flow Chart)

DATA2. Humidity Sensor table
- Voltage output table @23°…, 5Vdc --- HTG3515CH/HTG3535CH
  RH(Temperature compensate) = RH (Relative Humidity) + (Temp(°C) °© 23°C) x 0.05

RH(%)	Output (mV)	A/D (10 bit)	A/D (12 bit)
0	909	186	744
1	943	193	772
2	977	200	800
3	1010	207	827
4	1043	213	854
5	1076	220	881
6	1109	227	908
7	1141	233	935
8	1173	240	961
9	1205	247	987
10	1235	253	1011
11	1266	259	1037
12	1297	265	1062
13	1328	272	1088
14	1359	278	1113
15	1390	284	1138
16	1420	291	1163
17	1450	297	1188
18	1480	303	1212
19	1510	309	1237
20	1540	315	1261
21	1569	321	1285
22	1598	327	1309
23	1627	333	1333
24	1656	339	1356
25	1685	345	1380
26	1713	350	1403
27	1741	356	1426
28	1769	362	1449
29	1797	368	1472
30	1825	373	1495
31	1852	379	1517
32	1879	384	1539
33	1906	390	1561
34	1933	395	1583
35	1960	401	1605
36	1986	406	1627
37	2012	412	1648
38	2038	417	1669
39	2064	422	1690
40	2090	428	1712
41	2116	433	1733
42	2142	438	1754
43	2168	444	1776
44	2194	449	1797
45	2220	454	1818

RH(%)	Output (mV)	A/D (10 bit)	A/D (12 bit)
46	2246	460	1839
47	2272	465	1861
48	2298	470	1882
49	2324	475	1903
50	2350	481	1925
51	2376	486	1946
52	2402	491	1967
53	2428	497	1989
54	2454	502	2010
55	2480	507	2031
56	2505	513	2052
57	2530	518	2072
58	2555	523	2093
59	2580	528	2113
60	2605	533	2133
61	2630	538	2154
62	2655	543	2174
63	2680	548	2195
64	2705	553	2215
65	2730	559	2236
66	2756	564	2257
67	2782	569	2278
68	2808	575	2300
69	2834	580	2321
70	2860	585	2342
71	2886	590	2364
72	2912	596	2385
73	2938	601	2406
74	2964	606	2428
75	2990	612	2449
76	3017	617	2471
77	3044	623	2493
78	3071	628	2515
79	3098	634	2537
80	3125	639	2559
81	3152	645	2581
82	3179	650	2604
83	3206	656	2626
84	3233	661	2648
85	3260	667	2670
86	3288	673	2693
87	3316	678	2716
88	3344	684	2739
89	3372	690	2762
90	3400	696	2785
91	3426	701	2806

RH(%)	Output (mV)	A/D (10 bit)	A/D (12 bit)
92	3452	706	2827
93	3478	712	2848
94	3504	717	2870
95	3530	722	2891
96	3566	730	2920
97	3595	735	2944
98	3624	741	2968
99	3653	747	2992
100	3683	754	3016

TROUBLESHOOTING

4-2-1. If the trouble is detected by self-diagnosis

- The error of sensor will be displayed on the front of display.
  when the error of sensor is detected at initial power ON, the appliance will not operated and display of abnormal sensor part will blink.
- The appliance will not stop operating when the error of sensor is detected during operation of the appliance.
  But normal freezing might be not operated if the appliance is operated by the emergency operation mode. You would better to check the appliance according to the self-diagnosis of the manual.

1) If ICE Maker Sensor has trouble

ERROR Code

DATA1.
Temperature table

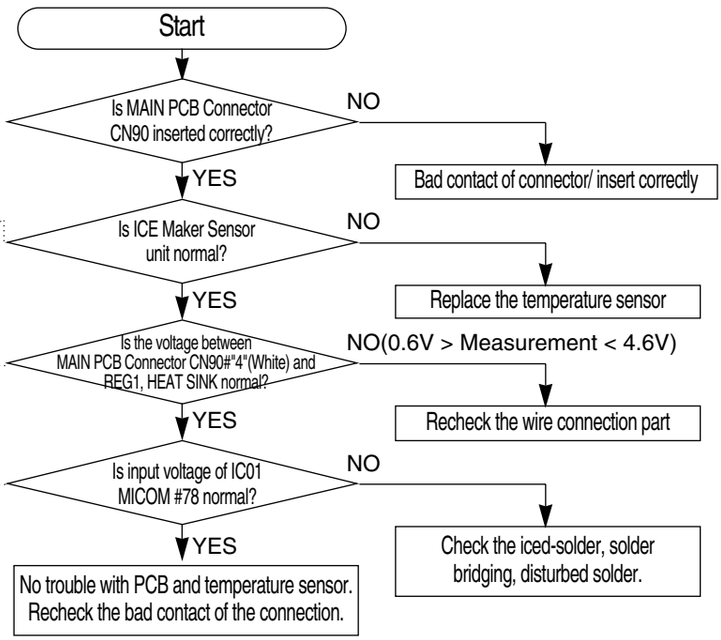
** Measuring point of resistance value according to Sensor **
ICE MAKER: CN90#1↔#7 measuring resistance value
** 0Ω : Short trouble / ∞Ω : Open trouble

Refer to circuit diagram in the manual

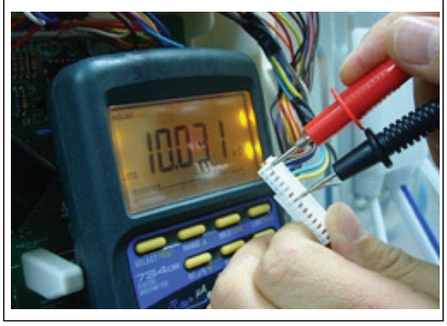
Sensor MICOM/Connector number	
ICE Maker	Connector CN90# "±1"(Brown)and REG1 HEAT-SINK PCB common Ground

Voltage measured between 4.6V ~ 0.6V.

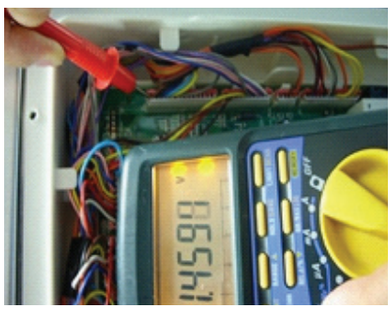
Measuring voltage of IC01 MICOM #89, CN90# "1" (Brown) and REG1, HEAT SINK from PCB typical Ground part are similar.
→ Check the measure on the Resistance, R914due to the SMD MICOM



☞ Checking method of ICE Maker Sensor resistance CN90 "1"(Brown) ↔ "7"(Gray)
- Compare the temperature table after the measure.



☞ Checking method of ICE Maker Sensor resistance
- Measure the Resistance R914(IC01 MICOM #89) on PCB or CN90 "1"(Brown) ↔ REG1, HEAT SINK
- Compare the temperature table after the measure.
  Measuring voltage of CN90#4(White) ↔ REG1, HEAT SINK are below.

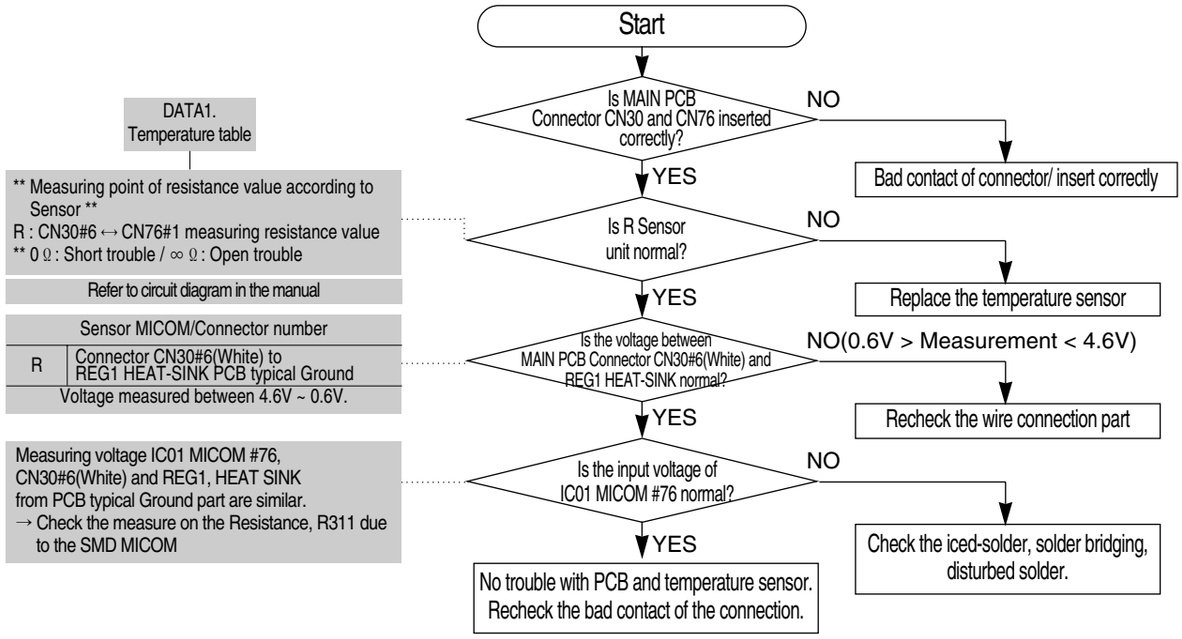


typical PCB Ground
REG1 HEAT-SINK

TROUBLESHOOTING

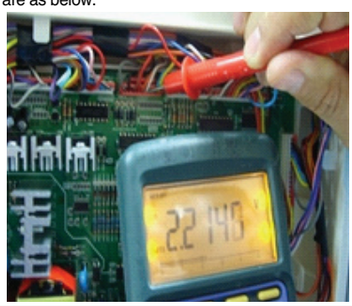
2) If R Sensor has trouble

ERROR Code



☞ Checking method of R Sensor resistance
CN30#6(White) ↔ CN76#1(Gray) Compare the temperature table after measurment.

☞ Checking method of R Sensor resistance
- Measure the voltage of Sensor Check Point #3(IC01 MICOM #76) on PCB or CN30#6(White) ↔ REG1, HEAT SINK
- Compare the temperature table after measurement.
Measuring voltage of CN30#6(White) ↔REG1, HEAT SINK are as below.



Typical PCB Ground
REG1, HEAT SINK

TROUBLESHOOTING

3) If R DEF Sensor has trouble

ERROR Code

DATA1.
Temperature table

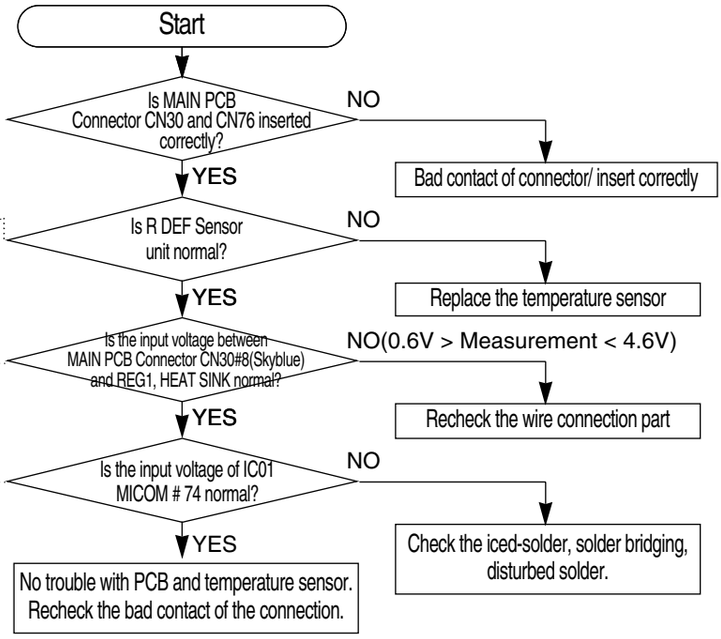
** Measuring point of resistance value according to Sensor **
R-DEF : CN30#8 ↔ CN76#1 measuring resistance value
** 0Ω : Short trouble / ∞Ω : Open trouble

Refer to circuit diagram in the manual

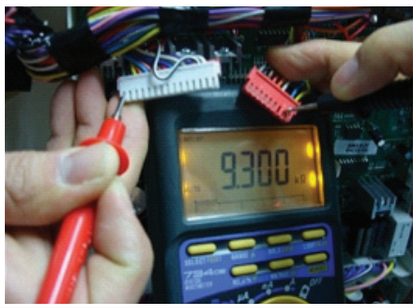
Sensor MICOM/Connector Number	
R DEF	Connector CN30-"8"(Sky-blue) and REG1, HEAT SINK PCB common Ground

Voltage measured between 4.6V ~ 0.6V.

Measuring voltage of IC01 MICOM #78 CN30-"8"(Sky-blue) and REG1, HEAT SINK from PCB typical Ground part are similar.
→ Check the measure on the Resistance R313 due to the SMD MICOM

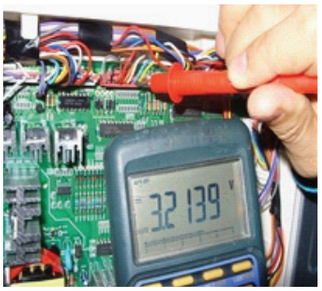


☞ Checking method of R Sensor resistance
CN30#8(Sky-blue) ↔ CN76#1(Gray)
- Compare the temperature table after measurement.



☞ Checking method of R DEF Sensor resistance
- Measure the resistance R313(IC01 MICOM #78) on PCB or CN30#8(Sky-blue)↔REG1, HEAT SINK
- Compare the temperature table after measurement.

Measuring voltage of CN30#8(Sky-blue) ↔ REG1, HEAT SINK are as below.



Typical PCB Ground
REG1, HEAT SINK

TROUBLESHOOTING

4) If Ambient Sensor has trouble

ERROR Code

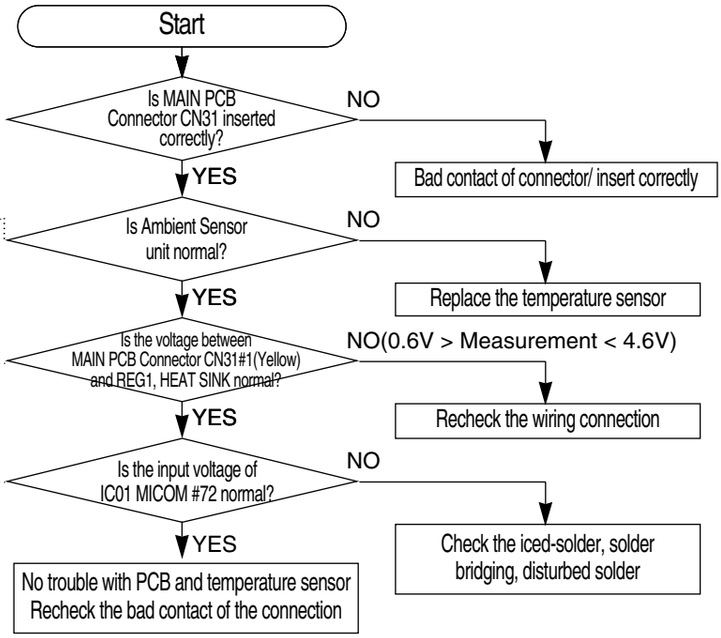
DATA1.
Temperature table

** Measuring point of resistance value according to Sensor **
Ambient : CN78#8 ↔ #12 measuring resistance value
** Placed in the right top table of upper hinge.
** 0Ω : Short trouble / ∞Ω : Open trouble

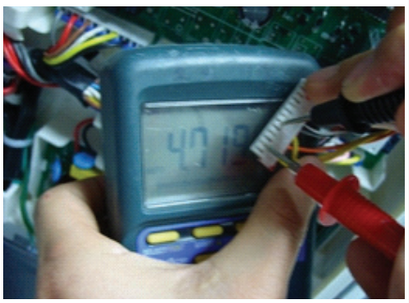
Refer to circuit diagram in the manual

Sensor MICOM/Connector number	
Ambient	Connector CN78-"8"(Yellow) to REG1, HEAT-SINK PCB typical Ground
Voltage measured between 4.6V ~ 0.6V.	

Measuring voltage of IC01 MICOM CN78-"8"(Yellow) and REG1, HEAT SINK from PCB typical Ground part are similar.
→ Check the measure on the Resistance, R315 due to the SMD MICOM



☞ Checking method of Ambient Sensor resistance
CN78-#"8"(Yellow) ↔ # "12"(Yellow)
- Compare the temperature table after measurement.



☞ Checking method of Ambient Sensor voltage
- Measure the voltage of Resistance R315(IC01 MICOM #91) on PCB or CN78-"8"(Yellow) ↔ REG1, HEAT SINK
- Compare the temperature table after measurement.

Measuring voltage of CN78-"8"(Yellow) ↔ REG1, HEAT SINK are as below

Typical PCB Ground
REG1 Heater Sink

TROUBLESHOOTING

5) If F Sensor has trouble

ERROR Code

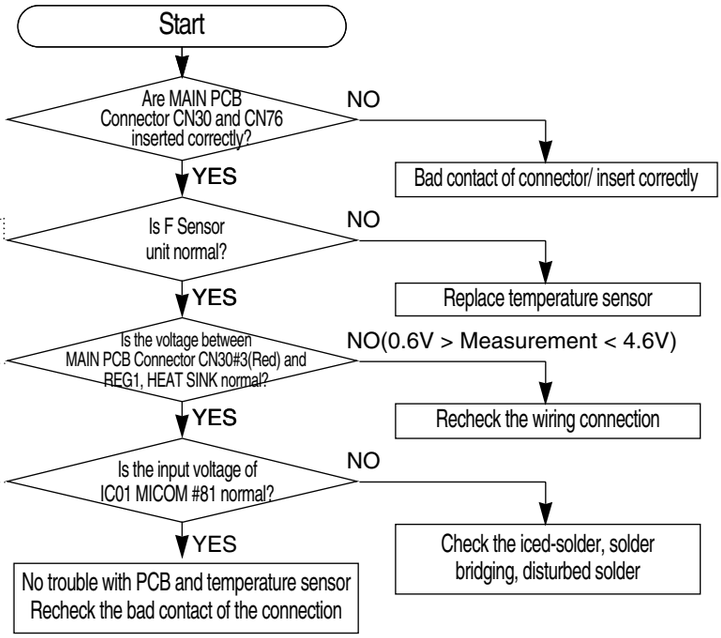
DATA1.
Temperature table

** Measuring point of resistance value according to Sensor **
F :CN30#3 ↔ CN76#1 measuring resistance value
** 0 Ω : Short trouble / ∞ Ω : Open trouble

Refer to circuit diagram in the manual

Sensor MICOM/Connector number	
F	Connector CN30#3(Red) to REG1, HEAT SINK PCB typical Ground
Voltage measured between 4.6V ~ 0.6V.	

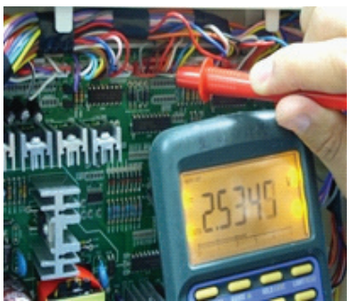
Measuring voltage of IC01 MICOM #74, CN30#3(Red) and REG1, HEAT SINK from PCB typical Ground part are similar.
→ Check the measure on the Resistance, R309 due to the SMD MICOM



☞ Checking method of F Sensor resistance CN30-"4"(Red) ↔ CN76-"1"(Gray)
- Compare the temperature table after measurement.

☞ Checking method of F Sensor voltage
- Measure the voltage of Resistanec, R309(IC01 MICOM #74) on PCB or CN30-"4"(Red) ↔ REG1, HEAT SINK
- Compare the temperature table after measurement.

Measuring voltage of CN30-"4"(Red) ↔ REG1, HEAT SINK are as below.



Typical PCB Ground
REG1 Heater Sink

TROUBLESHOOTING

6) If F DEF Sensor has trouble

ERROR Code

DATA1.
Temperature table

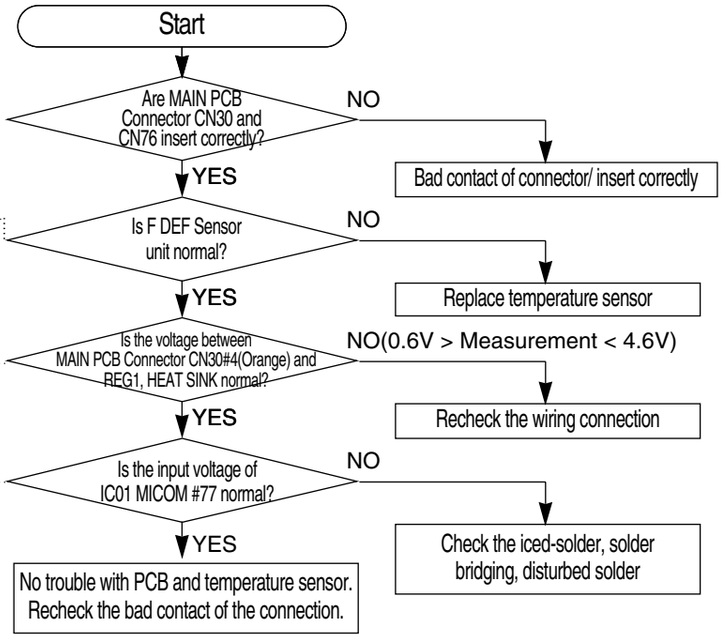
** Measuring point of resistance value according to Sensor **
F-DEF : CN30#5 ↔ CN76#1 measuring resistance value
** 0 Ω : Short trouble / ∞ Ω : Open trouble

Refer to circuit diagram in the manual

Sensor MICOM/Connector number	
F DEF	Connector CN30-"5"(Orange) to REG1, HEAT SINK PCB typical Ground

Voltage measured between 4.6V ~ 0.6V.

Measuring voltage of IC01 MICOM #75, CN30-"5"(Orange) and REG1, HEAT SINK from PCB typical Ground part are similar.
→ Check the measure on the Resistance, R310 due to the SMD MICOM



☞ Checking method of F DEF Sensor resistance
CN30-"5"(Orange) ↔ CN76#1(Gray)
- Compare the temperature table after measurement.

☞ Checking method of F DEF Sensor voltage
- Measure the voltage of Resistance, R310(IC01 MICOM #75) on PCB or CN30-"5"(Orange) ↔ REG1, HEAT SINK
- Compare the temperature table after measurement.

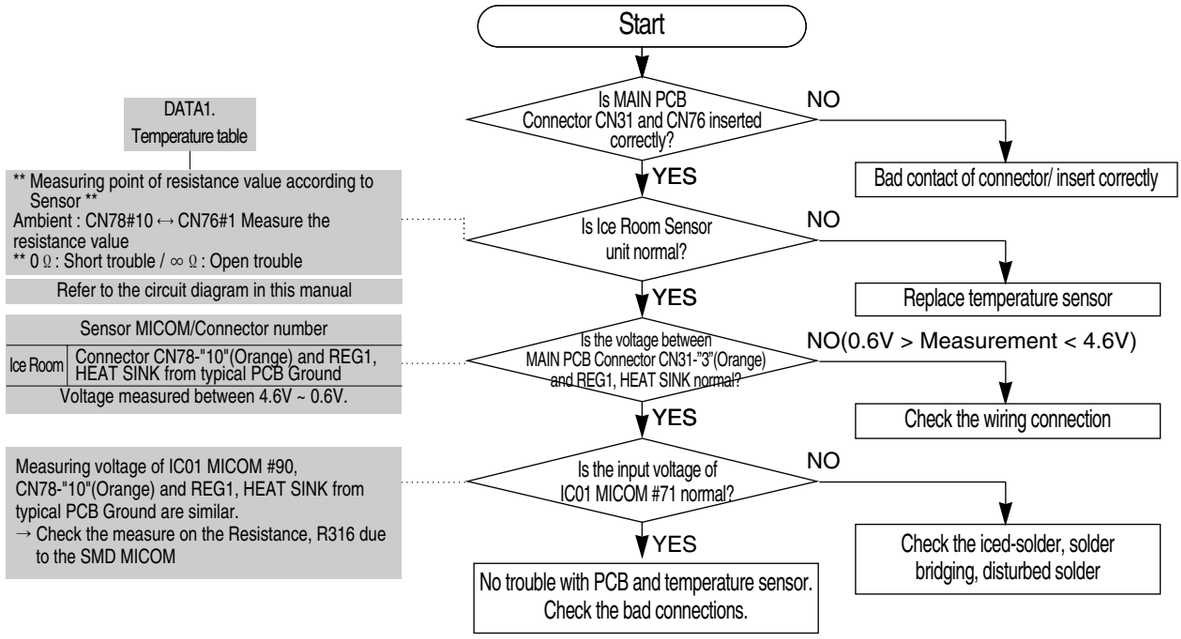
Measuring voltage of CN30-"5"(Orange) ↔ REG1, HEAT SINK are as below

Typical PCB Ground
REG1, Heater Sink

TROUBLESHOOTING

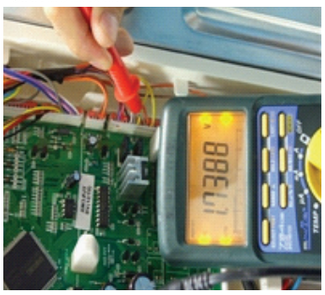
7) If Ice Room Sensor has trouble

ERROR Code



☞ Checking Mehod of Ice Room Sensor voltage
CN78-"10"(Orange) ↔ CN76-"1" (Gray)
- Compare with the temperature table after measurement.

☞ Checking Method of Ice Room Sensor Voltage
- Measure the Resistance, R316(IC01 MICOM #90) on PCB or CN78-"10"(Orange) ↔ REG1, HEAT SINK
- Compare with the temperature table after measurement. Measured voltage of CN78-"10"(Orange) ↔ REG1, HEAT SINK are as below



Typical PCB Ground
REG1, HEAT SINK

TROUBLESHOOTING

8) If Flex Sensor has trouble

ERROR Code

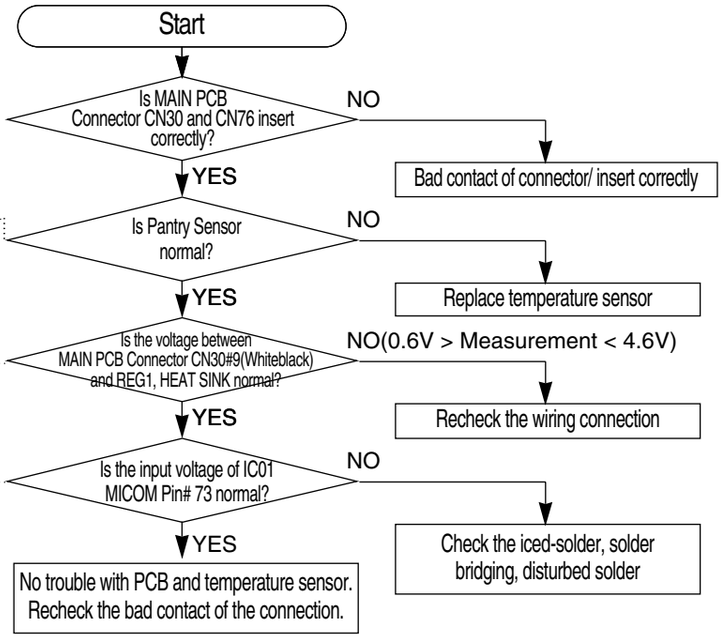
DATA1.
Temperature table

** Measuring point of resistance value according to Sensor **
Flex : CN30#9 ↔ CN76 #1 measuring resistance value
** 0Ω : Short trouble / ∞Ω : Open trouble

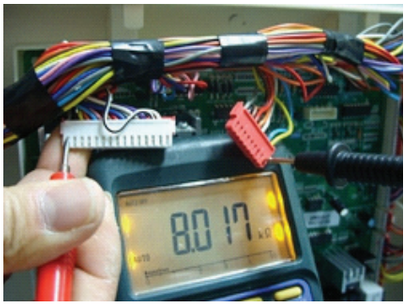
Refer to circuit diagram in the manual

Sensor MICOM/Connector number	
Pantry	Connector CN30-"9"(Yellow) to REG1 HEAT SINK PCB typical Ground
Voltage measured between 4.6V ~ 0.6V.	

Measuring voltage of IC01 MICOM #81, CN30-"9"(Yellow) and REG1, HEAT SINK from PCB typical Ground part are similar.
→ Check the measure on the Resistance, R314 due to the SMD MICOM

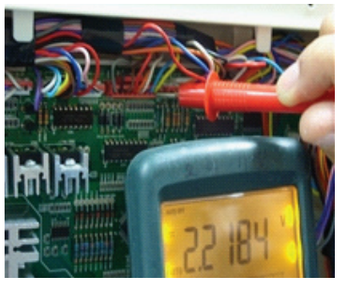


☞ Checking method of Flex Sensor resistance
CN30-"9"(Yellow) ↔ CN76#1(Gray)
- Compare the temperature table after measurement.



☞ Checking method of Flex Sensor voltage
- Measuring resistance, R314(IC01 MICOM #81) on PCB or CN30-"9"(Yellow) ↔ REG1, HEAT SINK
- Compare the temperature table after measurement.

Measuring voltage of CN30-"9"(Yellow) ↔REG1, HEAT SINK are as below



Typical PCB Ground
REG1 Heater Sink

TROUBLESHOOTING

9) If Humidity Sensor has trouble

ERROR Code

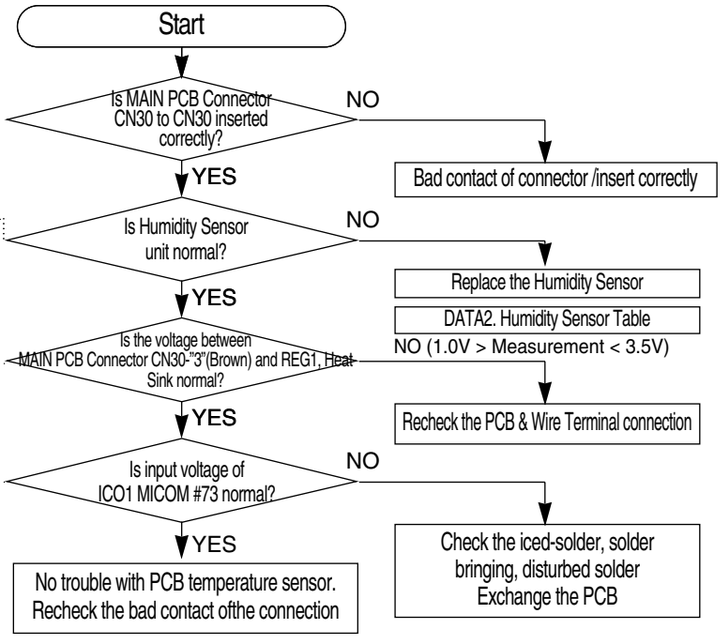
** Measuring point of resistance value according to Sensor"
Humidity : CN30#1↔ #3
Resistance value with opened : about 50 Ω
** 0 Ω : Short trouble / ∞ Ω : Open trouble

Refer to circuit diagram in the manual

Sensor MICOM/Connector number	
Humidity	Connector CN30-"3"(brown) to REG1 HEAT-SINK PCB typical Ground

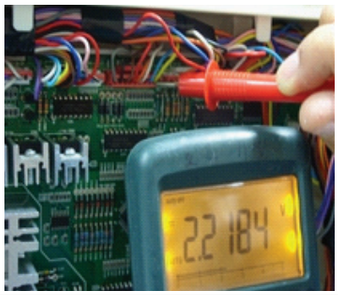
Voltage measured between 3.5V ~ 1.0V

Measuring voltage of ICO1 MICOM #73, CN30-"3"(Brown) and REG1, HEAT SINK from PCB typical Ground part are similar.
→ Check the Resistance, R321



☞ Checking method ofHumidity Sensor resistance
CN30-"3"(Brown)↔ "1"(Gray)
- Compare the temperature table after the measure.

☞ Checking method ofHumidity Sensor voltage.
- Measure the voltage of Resistance, R321(IC01 MICOM #73) on PCB or CN30-"3"(Brown) ↔REG1, HEAT SINK
- Compare the temperature table after the measure.
Measuring voltage of CN30-"3"(Brown) ↔REG1, HEAT SINK are below

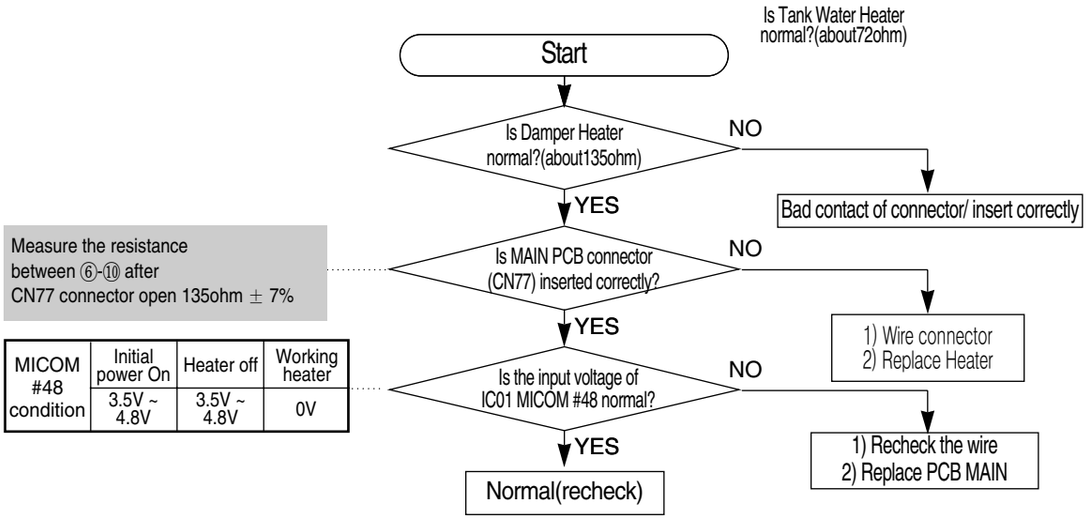


Typical PCB Ground
REG1 HEAT-SINK

TROUBLESHOOTING

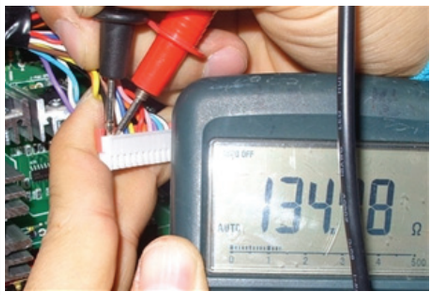
10) Mid Drawer Room Damper Heater has trouble

ERROR Code



MICOM #48 condition	Initial power On	Heater off	Working heater
	3.5V ~ 4.8V	3.5V ~ 4.8V	0V

☞ Checking method of Flex Room Damper resistance CN77-"1"(Black) ↔ "2"(Brown)
** ∞ Ω : Open(wire disconnection, heaterdisconnection) trouble / 0 Ω : Short trouble



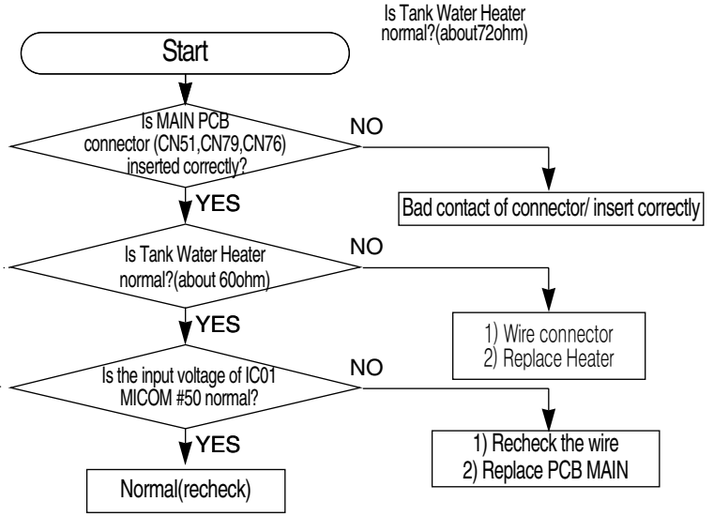
TROUBLESHOOTING

11) Ice Duct Heater(option) has trouble

ERROR Code

Heater	Ice Duct
Connector	CN51-#2 ↔ CN79-#2
ohm	60ohm ± 7%

Heater	Micom (IC01)	Initial power On	Heater off	Working heater
Ice Duct	#50	3.5V ~ 4.8V	3.5V ~ 4.8V	0V

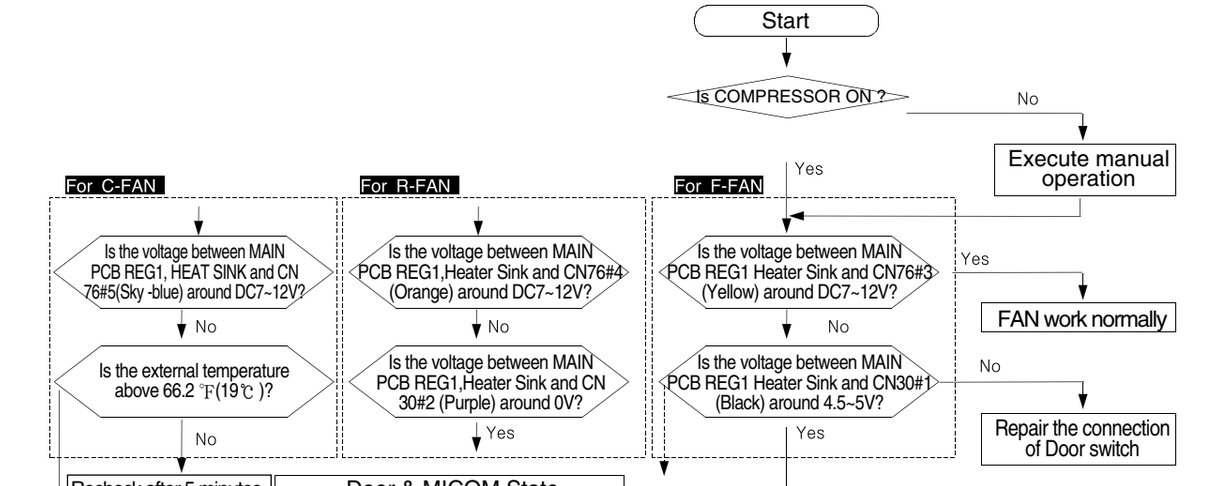


☞ Checking method of Flex Room Damper resistance CN51-"2"(Brown) ↔ CN79-"2"(Yellow)
** ∞ Ω : Open(wire disconnection, heater disconnection) trouble / 0 Ω : Short trouble

TROUBLESHOOTING

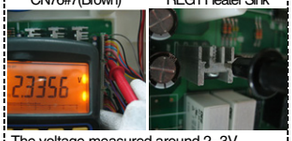
4-2-2. If FAN does not operate

- The refrigerator of this model has BLDC FAN motor. BLDC motor is driven by DC 7~12V.
- On the normal condition of COMP ON, it operates together with F-FAN motor.
  If door is opened and closed once at a high ambient temperature, it will be operated after 1 minute delay.
  Therefore, you are advised not to taken it for an error.
-. If there is a trouble, you should select the self-diagnostic function to check the trouble before power off.



F FAN pulse voltage CN76#7(Brown)

Typical PCB Ground REG1 Heater Sink



The voltage measured around 2~3V with multi-meter though the voltage is very weak because of pulse signal

Reference

CN76-7(F),8(R),9(C)will generate the pulse signal when motor rotates.
These signals will be inputted into MICOM.
Unless signals are not inputted during motor operating, will be ON 10 seconds after fan Off. But if signals are not still entered, the above operation will restart four times more.
If signals are not entered continuously, the motor will be restarted after 10 Minutes. This function is effective when the normal operation of motor would be restrained by foreign matters such as ice.

◆ Expected causes
① Check that if FAN-MOTOR has failure itself.
② Check that if wiring connection has bad contact.
③ Check the input of the fan motor rotation pulse when motor fan operates.

☞ Display for checking the self-diagnostic function

R FAN ERROR

F FAN ERROR

C FAN ERROR

☞ Checking method of R,F,C FAN Motor voltage
The voltage between PCB typical Ground REG1 Heater Sink and
F FAN ; CN76#3(Yellow) shall be less than DC 7~12V.
R FAN ; CN76#4(Orange) shall be less than DC 7~12V.
C FAN ; CN76#5(Sky-blue) shall be less than DC 7~12V.
- Recheck if resistance values are different after measuring.

Typical PCB Ground REG1 Heater Sink

1) F-FAN

2) R-FAN

3) C-FAN

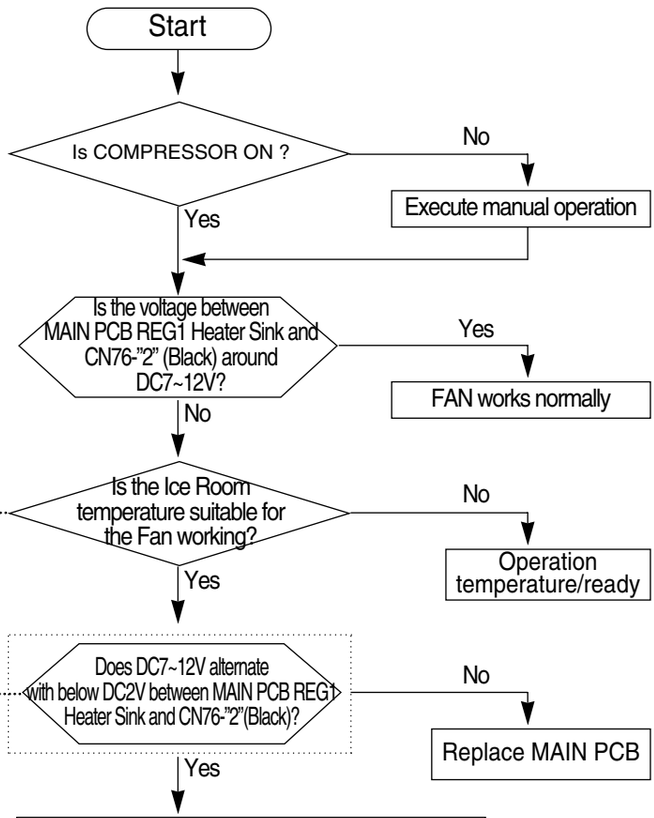
TROUBLESHOOTING

4-2-3. If ICE Room Fan does not operate

- This refrigerator has BLDC FAN motor. BLDC motor is driven by DC7~12V.
- When COMP ON, normally operates with F-FAN motor.
- If there is any trouble, you should select the self-diagnostic function to check the trouble before power off.

- When pressing the ICE TEST S/W for a certain period of time (over 1.5sec), the function is accomplished. After beginning of TEST mode, Ice maker heater turns on for initial 2 minutes, if the ice making temperature is below 0℃.
- If it exceeds 0℃, Ice maker heater turns on for initial 30 seconds.
- After Ice maker heater turns on for 30 seconds, it turns off and then Ice maker motor turns on.
- As the Ice maker motor turns on, TEST MODE COUNT operates. (6 minutes count)

Condition
- Ambient temperature : 32℃/75%
- Notch : 2℉/38℉(-19.0℃/3.3℃)
  Initial full of ice bucket capacity : 794 g, 58ea

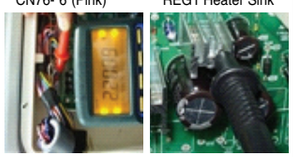


Ice Room control temperature	
Ice ON	8.6℉(-13℃)
Ice OFF	26.6℉(-3℃)

Reference

CN76 #6 will generate the pulse signal when motor rotates.
These signals will be input into MICOM.
Unless signals are not input during motor operating, will be ON 10seconds after fan OFF. But if signals are not still taken, the above operation will be retried four times more. If signals are not taken continuously, the motor will be restarted after 10 minutes. This function is against the case that motor movement would be restrained by foreign matters like ice.

FAN pulse voltage CN76-"6"(Pink) | Typical PCB Ground REG1 Heater Sink



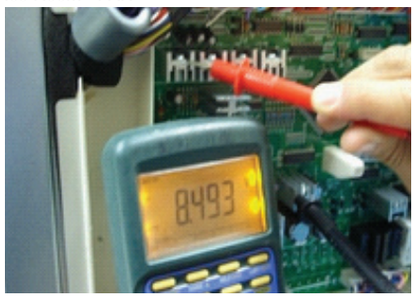
The voltage is variable due to pulse signal but measured about 2~3V with the Multi-Meter.

☞ Display for checking the self-diagnostic function

Ice Room FAN ERROR

☞ Checking method of Ice Room FAN Motor Voltage with the voltage between typical PCB Ground REG1 Heater Sink and Ice Room FAN ; CN7~12V(Black) shall be less than DC 6~12V.
- Additional check if resistance values are different after measurement.

1) Ice Room - FAN

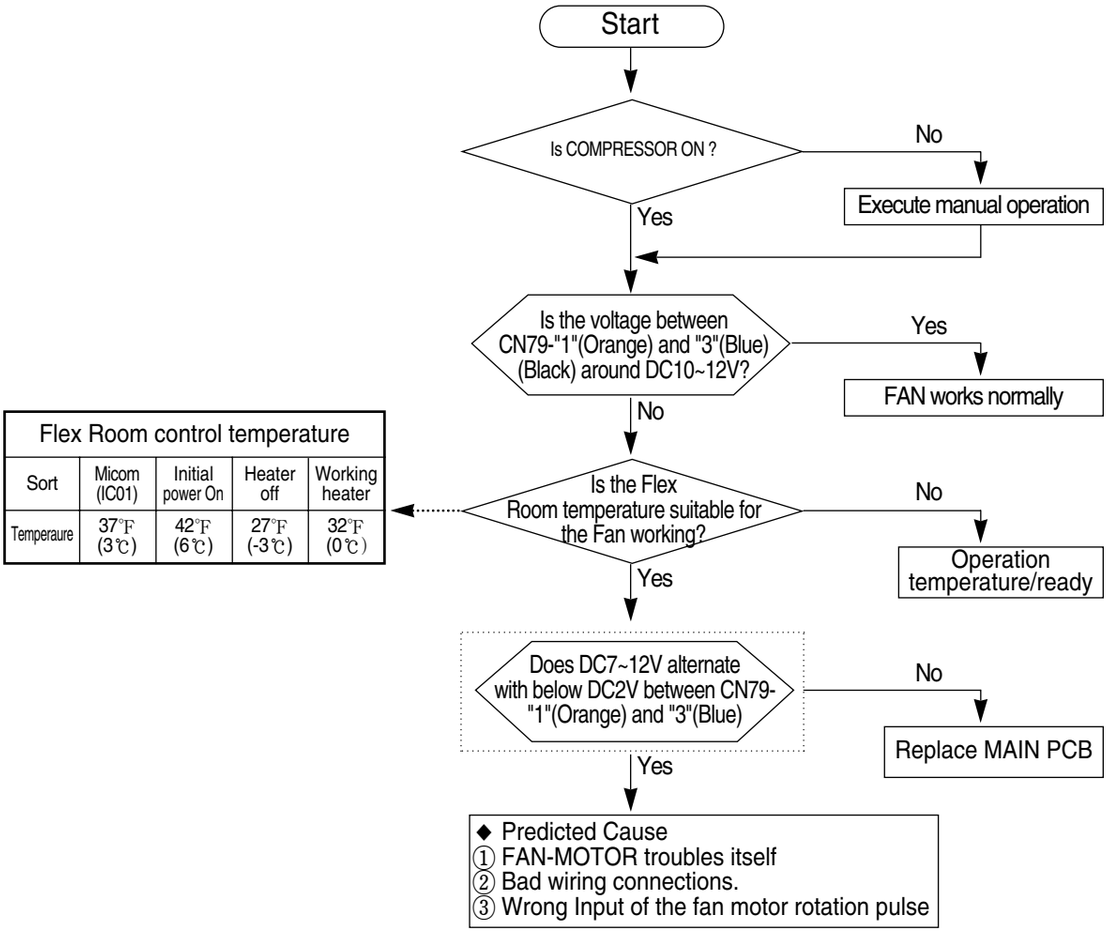


Typical PCB Ground
REG1 Heater Sink

TROUBLESHOOTING

4-2-4. If FAN does not operate(Flex Room - FAN)

- This refrigerator has BLDC FAN motor. BLDC motor is driven by DC10~12V
- When COMP ON, normally with F-FAN motor.



Flex Room control temperature				
Sort	Micom (IC01)	Initial power On	Heater off	Working heater
Temperaure	37℉ (3℃)	42℉ (6℃)	27℉ (-3℃)	32℉ (0℃)

☞ Checking method of Flex Zoon FAN Motor Voltage with the voltage between CN79-"1"(Orange) and "3"(Blue) shall be less than DC10~12V
- Additional check if resistance values are different after measurement.

1) Flex Room - FAN

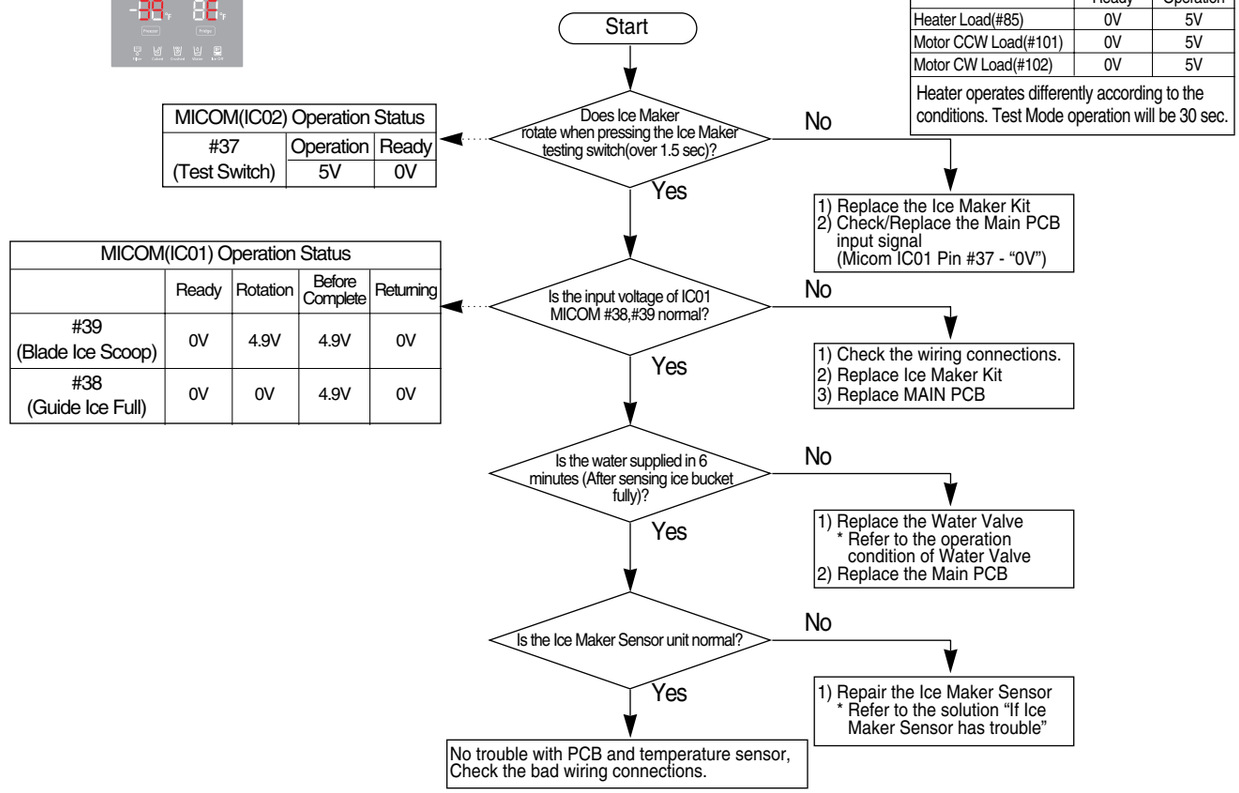
TROUBLESHOOTING

4-2-5. If Ice Maker does not operate

1. Water is automatically supplied to the Ice Maker depending on temperature & time condition and Ice Maker Dispenses cubed or crushed ice.
2. Power is applied to the one end of wires. Be careful when disassembling and shall refer to its exploded diagram in any case.
3. Ice Maker operation shall be checked after pressing the Ice Maker testing switch. (Fridge Ice Maker) It is not possible to check when the power is disengaged.
4. We recommend that TWO PEOPLE check the PCB and Ice Maker because they are located at front and rear side each.
5. Be careful! The Ice Maker Heater can cause personal injury like burn.

Displays ERROR Code

Operating Condition when motor rotates Operating Status of Micom(IC01)		
	Ready	Operation
Heater Load(#85)	0V	5V
Motor CCW Load(#101)	0V	5V
Motor CW Load(#102)	0V	5V
Heater operates differently according to the conditions. Test Mode operation will be 30 sec.		

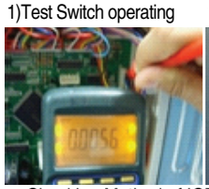


MICOM(IC02) Operation Status		
#37 (Test Switch)	Operation	Ready
	5V	0V

MICOM(IC01) Operation Status				
	Ready	Rotation	Before Complete	Returning
#39 (Blade Ice Scoop)	0V	4.9V	4.9V	0V
#38 (Guide Ice Full)	0V	0V	4.9V	0V

☞ Checking Method of ICE Maker Voltage
With typical PCB Ground REG1 Heater Sink and
1) Test Switch operation (press selected) : CN90-"2"(Black) shall be DC 0V.
Test Switch ready ; CN90-"2"(Black) shall be less than DC 5V.

1)Test Switch operating



1)Test Switch ready

Typical PCB Ground REG1 Heater Sink

☞ Checking Method of ICE Maker Voltage
With typical PCB Ground REG1 Heater Sink and
2) IC02 MICOM #39 voltage ; Ready(0V) → Rotate (4.9V) → Before complete(4.9V) → Return(0V)
* MICOM #39 voltage is same as Connector CN90-"7"(Purple)
3) IC02 MICOM #38 voltage ; Ready(0V) → Rotate (0V) → Before complete(4.9V) → Return(0V)
* MICOM #38 voltage is same as Connector CN90-"6"(Blue)

☞ Check the ICE Maker Heater & Motor Resistance

1) Measuring the Ice Maker Heater resistance values
CN70-"3"(Black) ↔ "13"(Black)

Resistance value : 91(365)Ohm± 30%

2) Measuring the Ice Maker Motor resistance values
CW :CN73-"11"(Brown) ↔ CN70-"11"(Red
CCW:CN73-"13"(White) ↔ CN70-"11"(Red)

Resistance value : 3.5KOhm± 7%

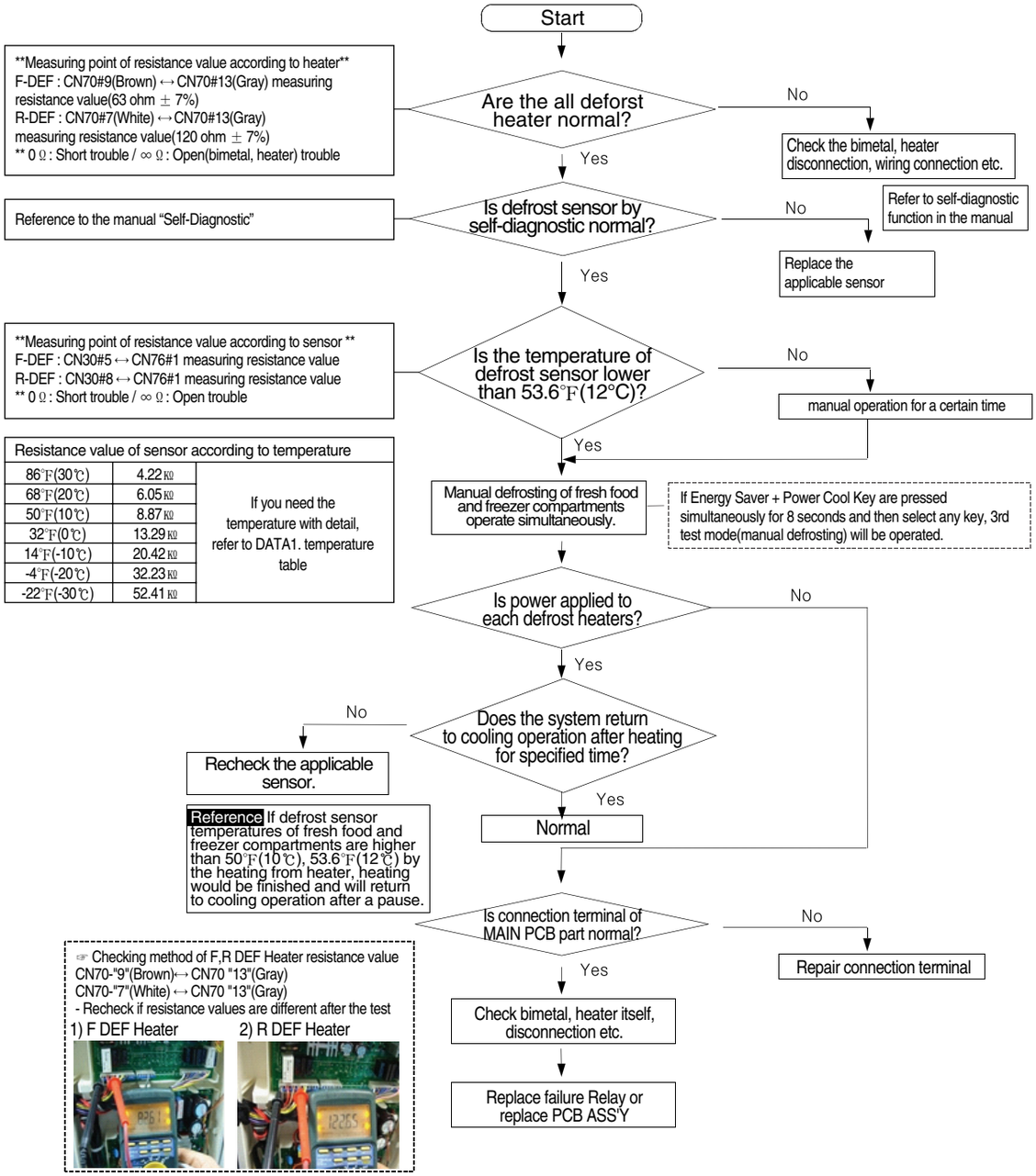
TROUBLESHOOTING

4-2-6. If defrost does not operate (F,R DEF Heater)

- If defrost has trouble, select the self-diagnostic function to detect the error of defrost heater before Power Off. (Check the function with the self-diagnostic function)

R DEF ERROR

F DEF ERROR



TROUBLESHOOTING

4-2-7. If Power is not supplied

Caution
At the power of main PCB, the AC115V power and a high-voltage over DC 170V are occurred.Please take care of yourself during repair and measurement.

- Refer to the function and reference parts in the manual when check the MAIN PCB

Start

Is the plug connected in?
- No → Connect plug again, check the plug loosening
- Yes ↓

Is power 115V applied to the both terminals of SMPS PCB CN70 ⑬-⑪?
- No → Check the assembly and wire connection
- Yes ↓

Check in SMPS PBA

Is fuse on the SMPS PCB down?
- Yes → 1) Replace FUSE AC 250V 2.0A 2) Replace PCB ASS'Y
- No ↓

Is DC170V applied to the both terminals of BD1+,-?
- No → 1) Check PCB PATTERN and replace BD1 2) Replace PCB ASS'Y
- Yes ↓

Is DC5.8V applied between TOP switch 246Y C and S?
- No → Replace PCB ASS'Y
- Yes ↓

Is 12V applied to the both terminals of C107?
- No → Replace PCB ASS'Y
- Yes ↓

Is 5V applied to the both terminals of TD102?
- No → 1) Check REG1 (KA7805) 2) Replace PCB ASS'Y
- Yes ↓

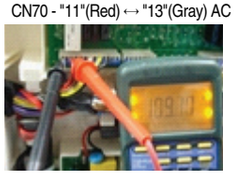
Does Panel PCB operate normally?
- No → 1) Check assembly wire and repair 2) Replace Panel PCB
- Yes ↓

Is the load (i.e. Relay) normal?
- No → 1) Check the contact of lead wire 2) Replace the applicable relay / PCB MAIN
- Yes ↓

Is there any PCB soldering, short, breakage?
- Yes → 1) Solder again 2) Replace PCB MAIN
- No → Normal(Recheck)

- Check MAIN PCB connection
- Check the connections between cabinet and door
- Check the connections between door and panel PCB

☞ Checking method of voltage
CN70 - "11"(Red) ↔ "13"(Gray) AC voltage

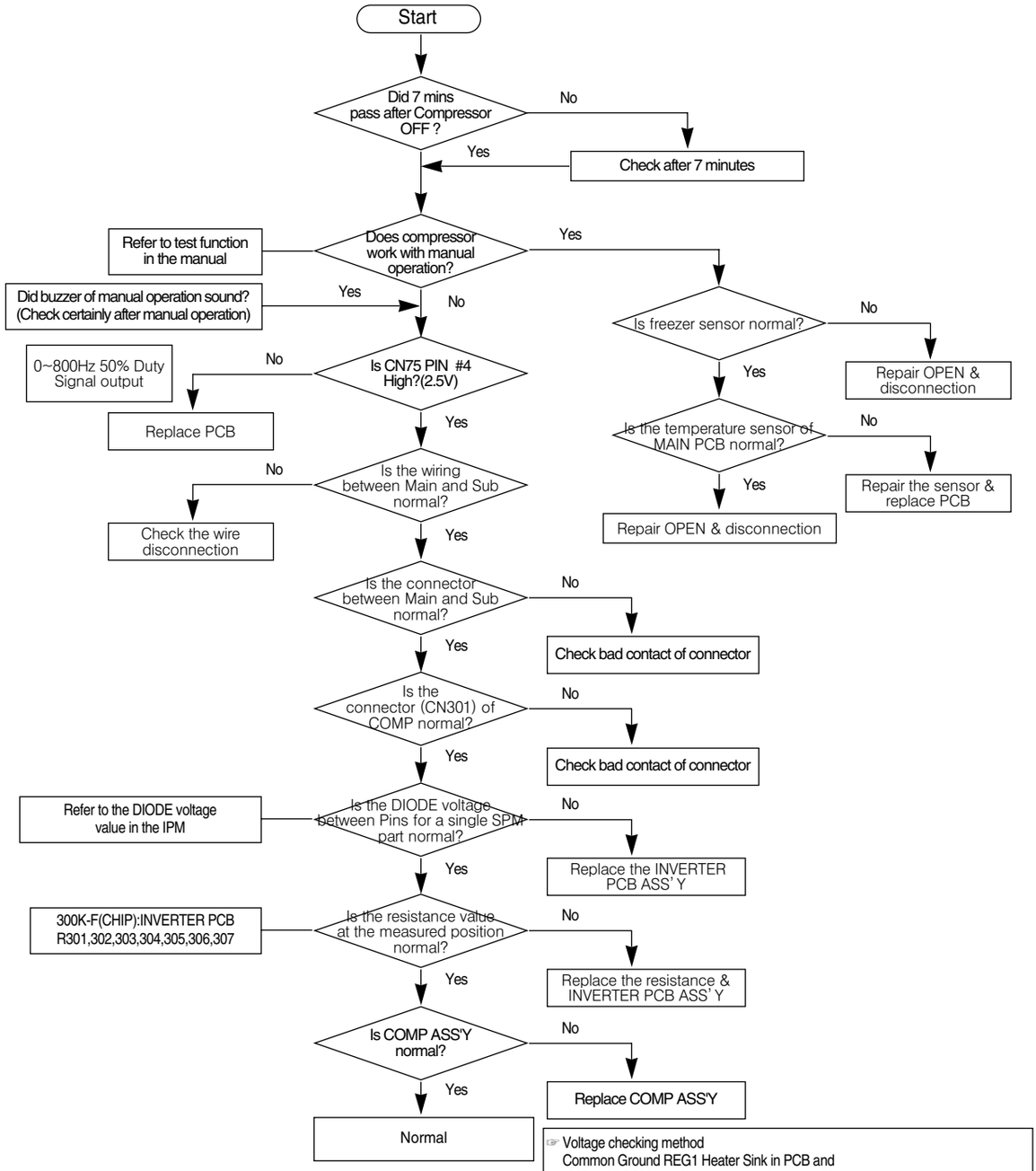


☞ Checking method of DC 2nd output voltage
REG1 input ; Regulator 7805 → same as C107 terminals. DC 12.0V 0.8V

☞ Checking method of DC 2nd output voltage
REG1 output ; Regulator 7805 → same as TD102terminals. DC 5V ± 0.5V

TROUBLESHOOTING

4-2-8. If compressor does not operate

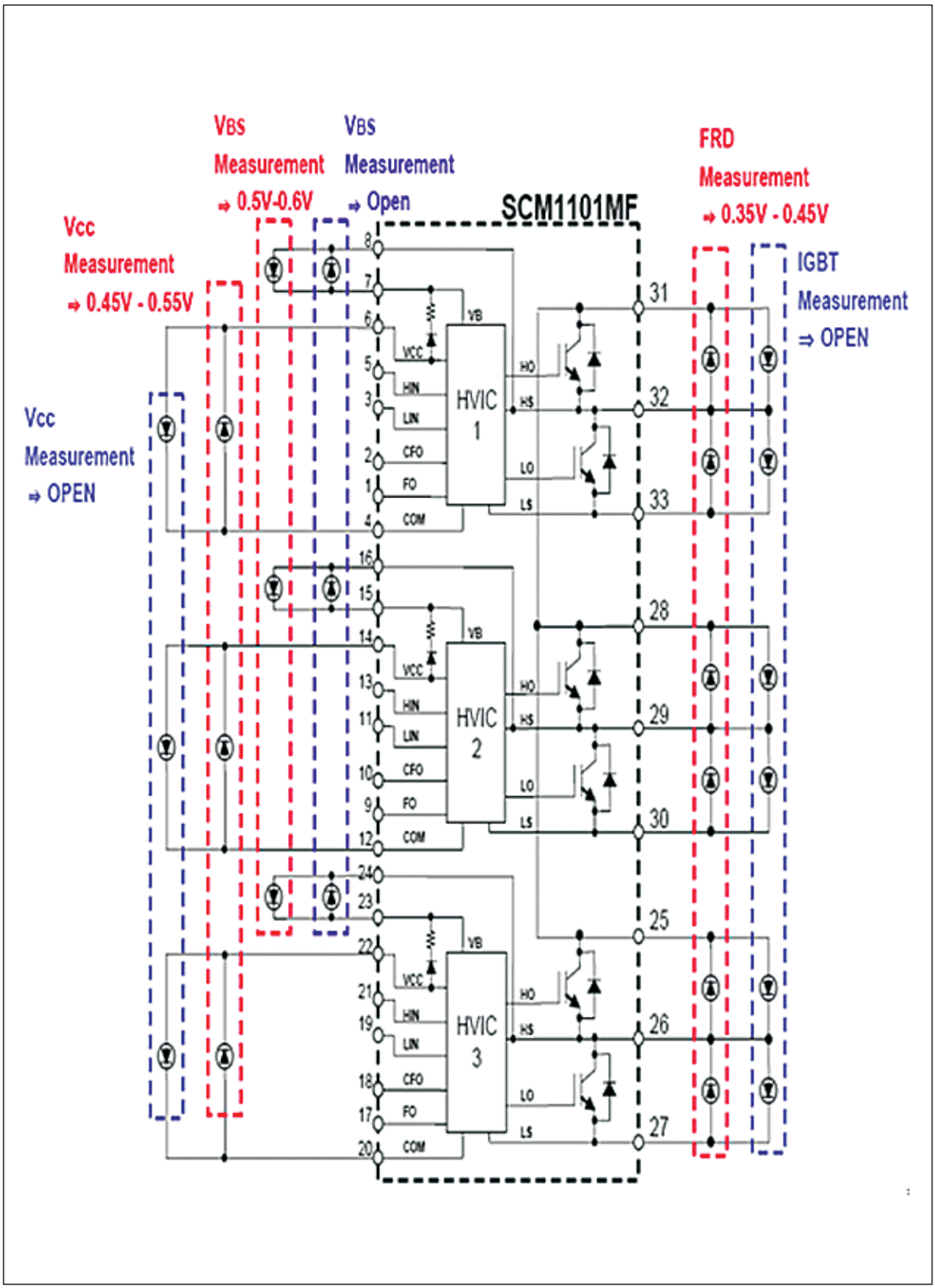


☞ Voltage checking method
Common Ground REG1 Heater Sink in PCB and
1) IC01 MICOM #4 ; Square wave voltage → 3V measured after MULTI TEST
IC01 MICOM #4, COMP operates

Common PCB Ground
REG1 Heater Sink

TROUBLESHOOTING

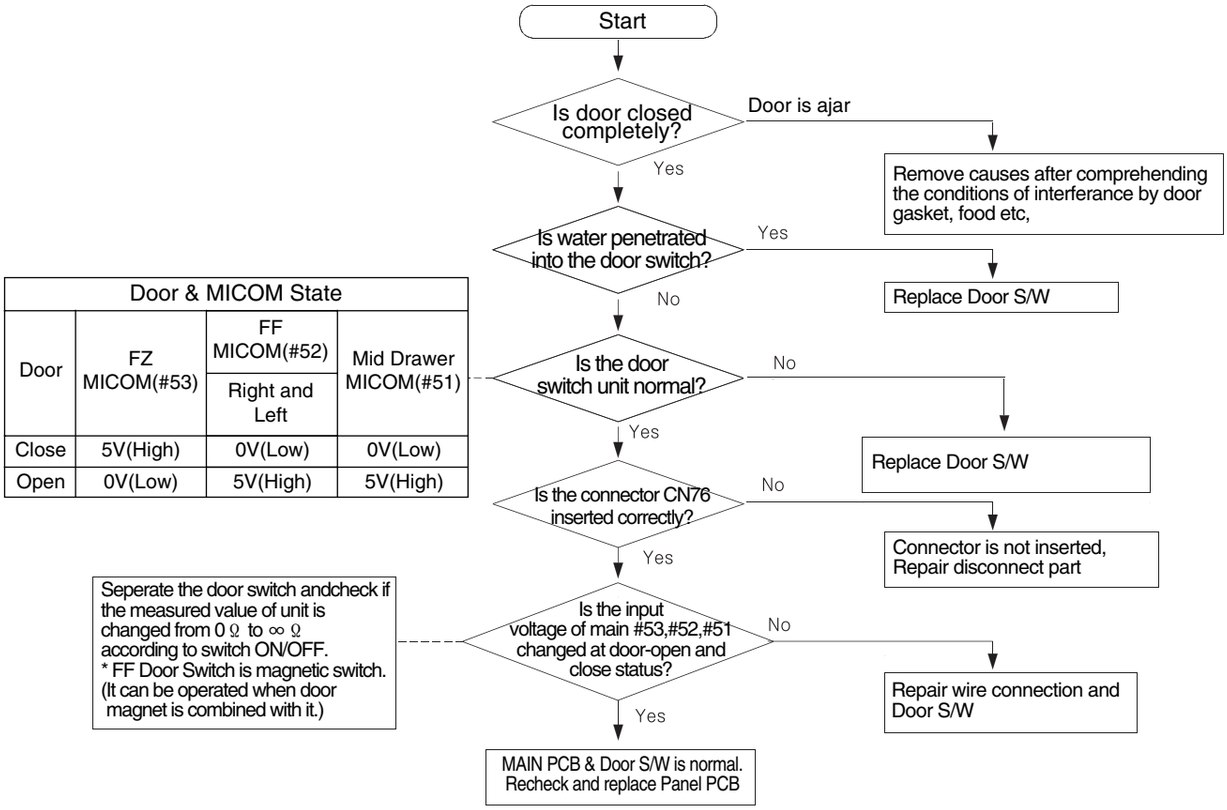
IPM FREEWHEELING DIODE VOLTAGE VALUE



TROUBLESHOOTING

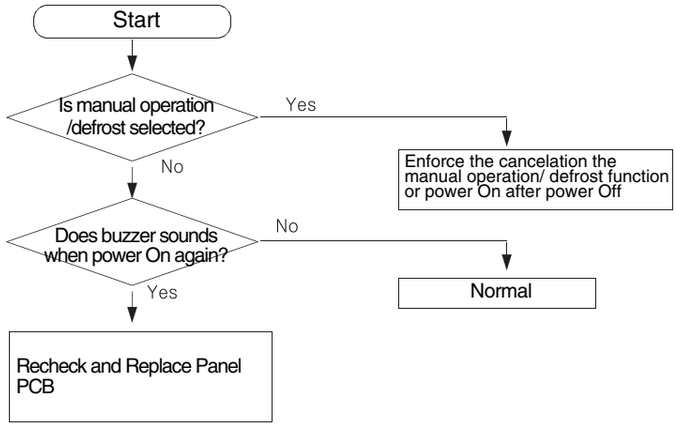
4-2-9. When alarm sounds continuously without stop(related with buzzer sound)

① If 'ding-dong'sound continuously



Door & MICOM State			
Door	FZ MICOM(#53)	FF MICOM(#52) Right and Left	Mid Drawer MICOM(#51)
Close	5V(High)	0V(Low)	0V(Low)
Open	0V(Low)	5V(High)	5V(High)

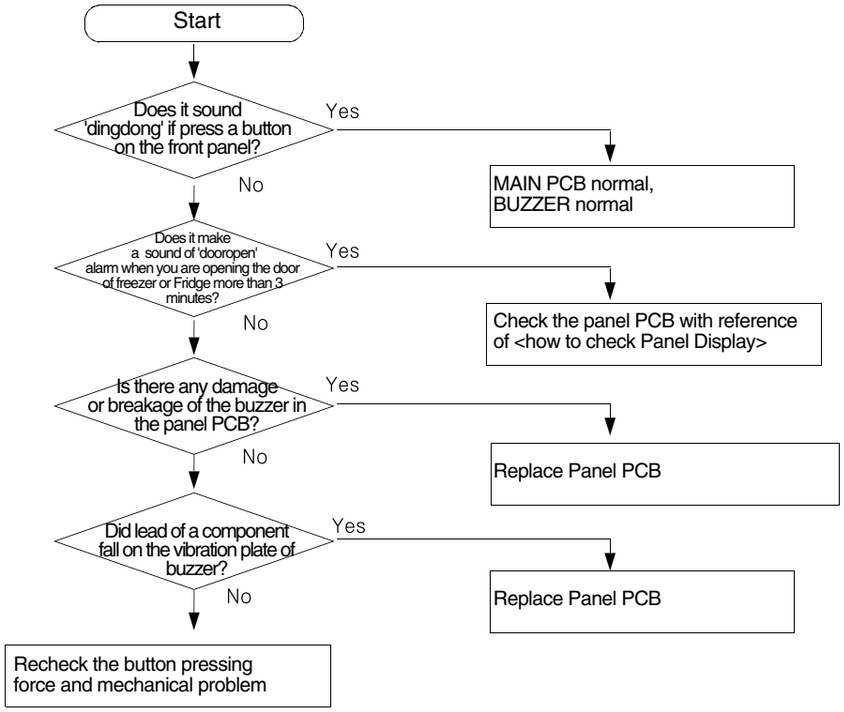
② If 'beep-beep' sounds continuously



AW3SM-EN2011.3.312:56PM페이지89 in

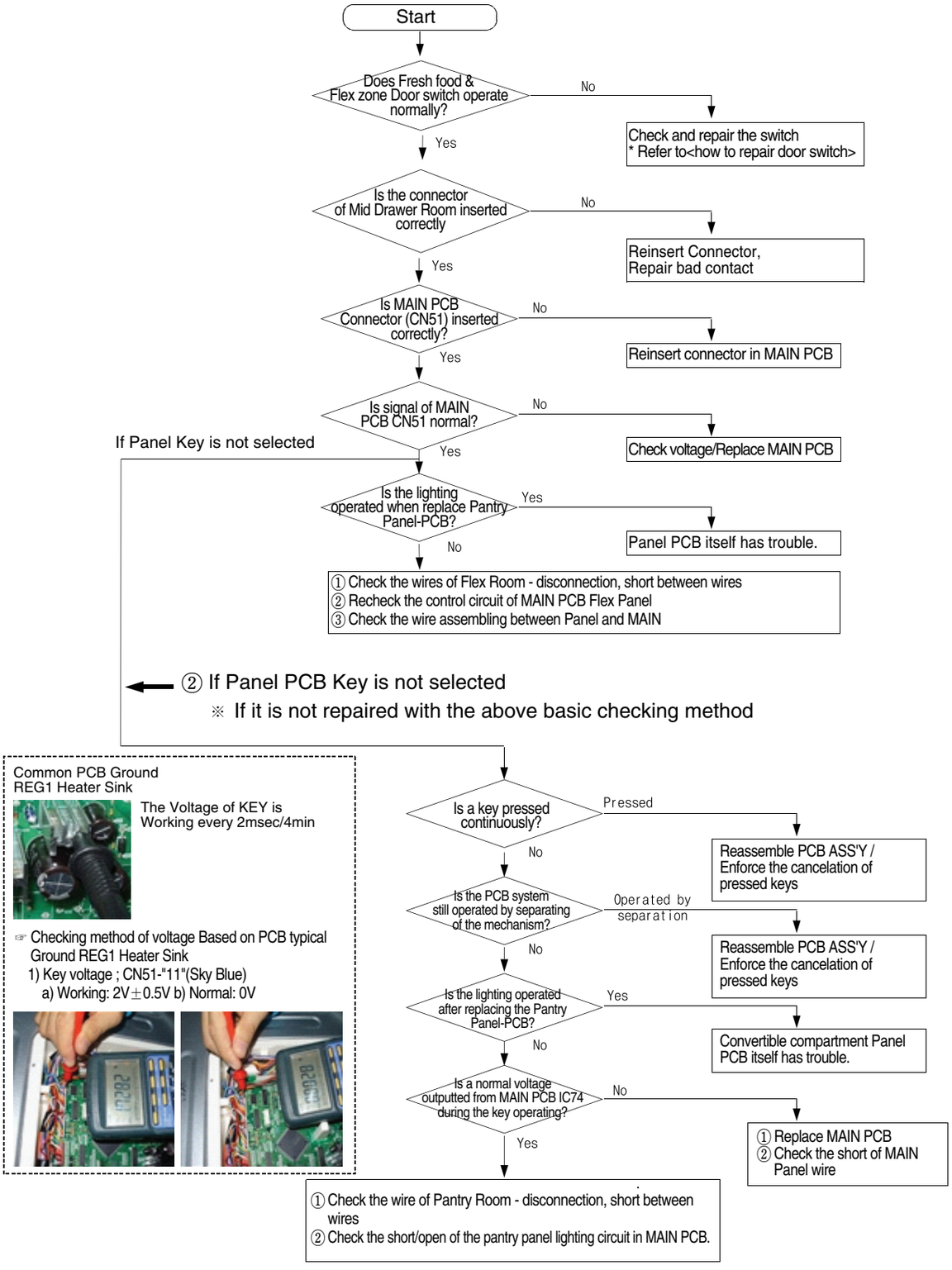
③ If buzzer does not sound

Buzzer is installed on the panel PCB in this model.
If buzzer does not sound even though the button is pressed, manual operation is started and door is opened, it should separate panel PCB and check the breakage of buzzer and bad soldering.
It is very hard to repair the panel PCB because it consists of SMD assemblies.
It is recommended to replace PCB assembly when the failure associated with panel is occurred except the minor error such as switch pressing error, surface peeling off and so on.



TROUBLESHOOTING

You should check the display after door opening because the display of this model operates only when the fresh food compartment door is opened.



TROUBLESHOOTING

4-2-10. When refrigerator ROOM Lamp does not light up

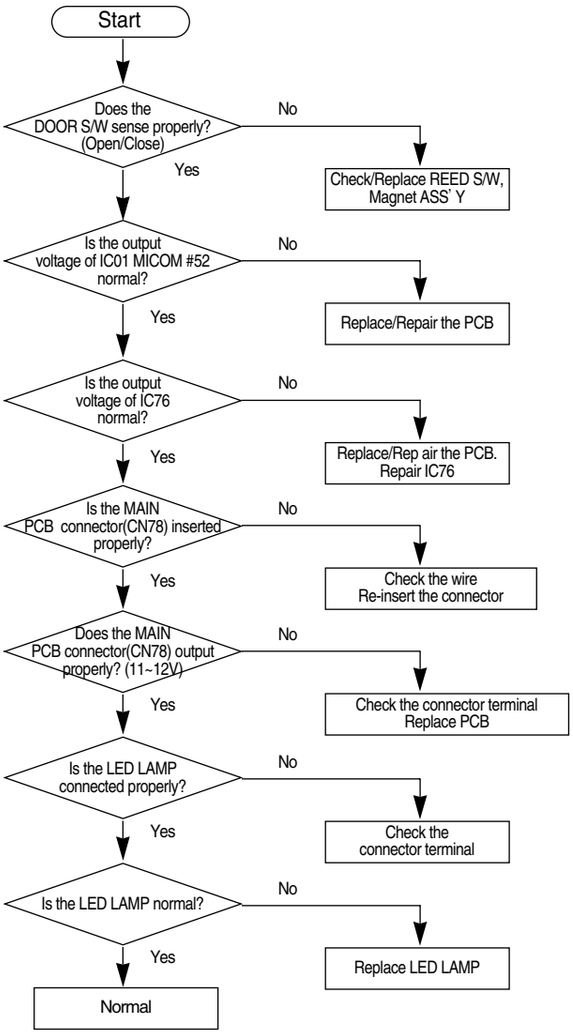
When controlling the regrigerator light with Regulator(12V) : LED LAMP
→ Applying to the FF/FZ/Mid Drawer compartment (Option)

* If the Vegetable Lamp does not work properly, check the FF compartment LED Lamp because it is connected with the FF compartment LED Lamp in parallel. Refer to the circuit diagram to repair.

Door & MICOM State	
Door	MICOM(#52)
	Right and Left
Close	0V(Low)
Open	5V(High)

MICOM State			
Door (Right and Left)	FF	FZ	Mid Drawer
	#52	#53	#51
Close	0V (Low)	5V (High)	0V (Low)
Open	5V (High)	0V (Low)	5V (High)

IC76(FF)/IC77(FZ)/IC78(Mid Drawer) State	
Micom	IC76(FF)/IC77(FZ)/IC78(Mid Drawer)
0V(Low)	0V(Low)
5V(High)	11~12V(High)



1) Measuring IC76 voltage(CN-"3" (Red)/FF LED) Measuring
IC77 voltage(CN78-"1"(Brown)/FZ LED) Measuring
IC78 voltage(CN78-"6"(White-Black)/Mid Drawer LED)

FF LED Lamp ON

FF LED Lamp OFF

CN76-"12"(Purple) (FF Door Switch)

Close

Open

Typical PCB Ground REG1 Heater Sink

TROUBLESHOOTING

4-2-11. If ICE Water is not supplied

1. Please shut the water supplying prior to repair.
2. Power is applied to the one end of wires. Be careful when disassembling not to get an electric shock.

Typical PCB Ground REG1 Heater Sink

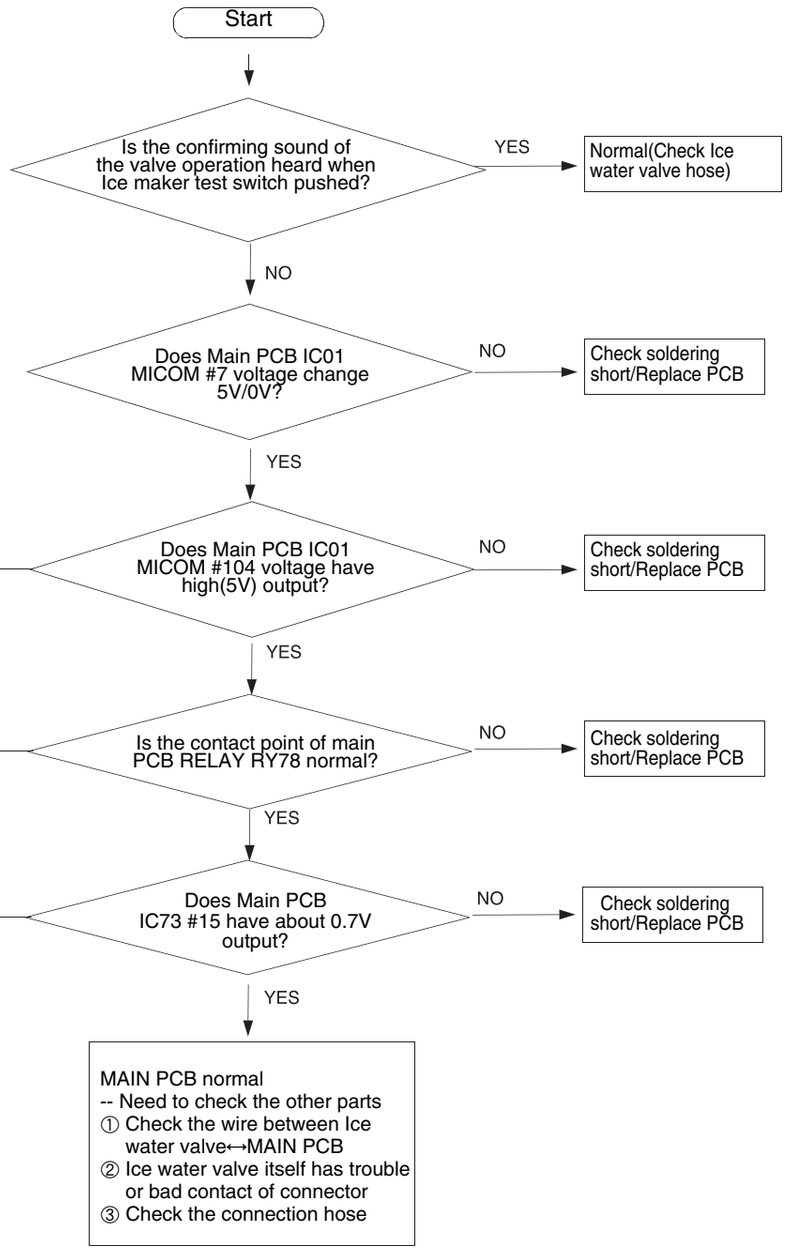
☞ Checking method of voltage Based on PCB typical Ground REG1 Heater Sink

1) Check the voltage of IC73#4(same voltage as IC01 #104)
   - ICE Water valve operating (about 5V±0.5V)

Based on PCB typical Ground REG1 Heater Sink

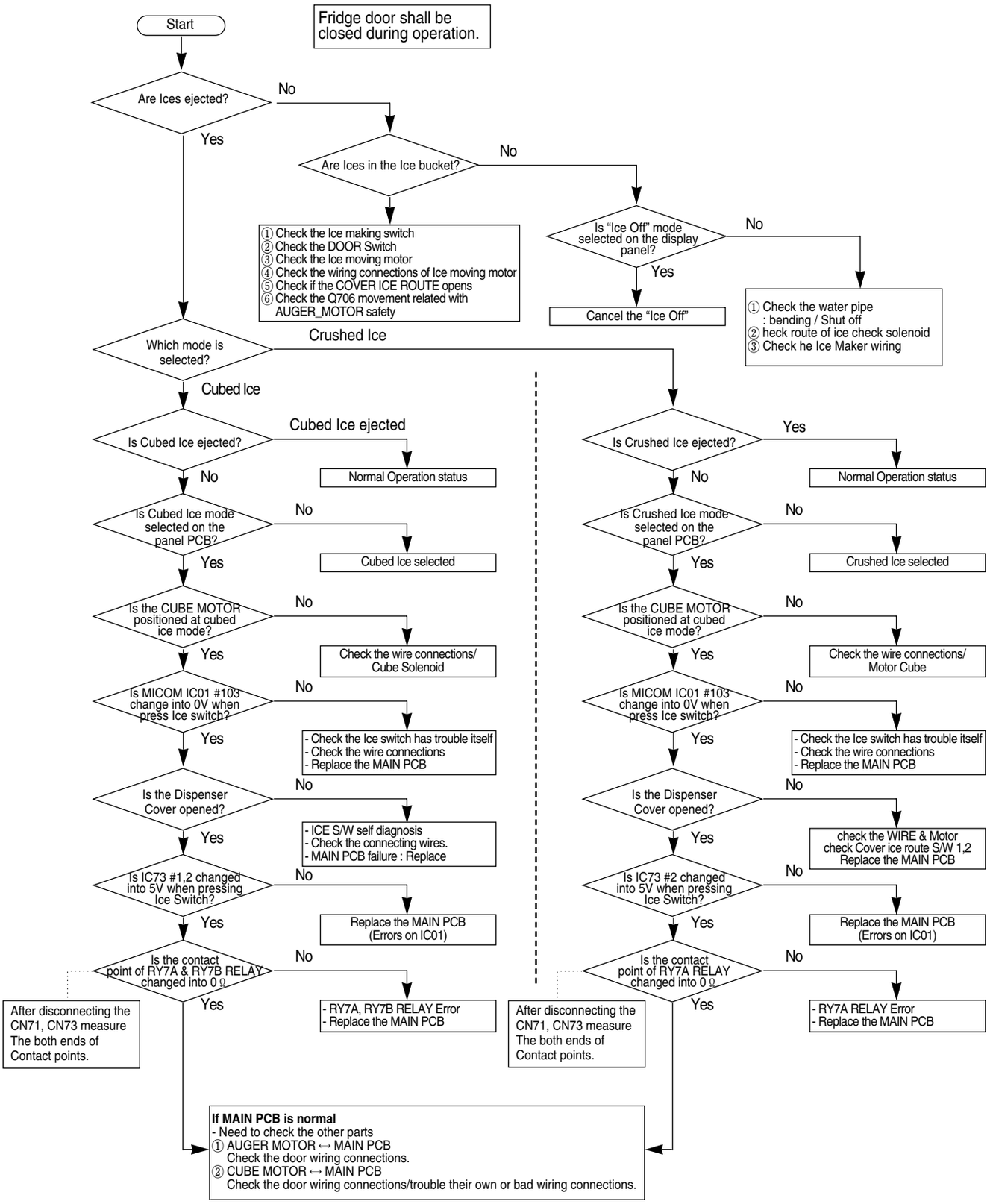
2) IC73 #15 voltage
- ICE Water valve Waiting (about 12V±0.8V)
- ICE Water valve operating (about 0.7V±0.5V)

3) Check the voltage of Water Valve operating (AC voltage)
   => For checking the Relay RY78 operating. CN73 and CN74 combined and use same connector(13p)
   CN70-"11"(Red) ↔ CN73-"7"(Purple)
   - ICE Water valve waiting (about AC 0V)



TROUBLESHOOTING

4-2-12. If Cubed or Crushed Ice is not supplied



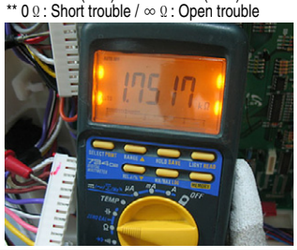
TROUBLESHOOTING

4-2-13. If Cover Ice Route Motor(Geard Motor) is not working normally

Caution
1. When replacing the Cover Ice Motor, pull out the plug to avoid an electric shock.
2. Be careful! When disassemble the Cover Ice Motor, spring can jumped out and may cause personal injury.
3. Motor will rotate continuously when the Motor Switch is not sensed.

☞ Checking Mehod of Cover Ice Route Motor Resistance
(Make sure to work after Power Off)
The Resistance is variable according to the input voltage.

CN73 and CN74 combined and use same connector(13P)
CN70 -"11" (Red) ↔ CN73 -"9" (Blue)
** 0Ω : Short trouble / ∞Ω : Open trouble



Start

Does GEARED MOTOR work properly?
- No → Replace the MOTOR
- Yes ↓

Is Cubed or Crushed Ice mode selected on the LED PANEL?
- No → Cubed or Crushed Ice is selected on the LED PANEL PCB
- Yes ↓

Is the DISPENSER switch selected?
- No → Select the DISPENSER switch
- Yes ↓

Does the wiring at the both sides of motor connected properly?
- No → Check the WIRE
- Yes ↓

When the MOTOR rotates.

Is the AC input voltage applied to the both ends of the motor?
- Yes → Check the MOTOR/Check any interference on MOTOR rotation
- No ↓

① Check CN73 -"9" Connector / Re-connect
② Check the short/open for the SSR75 of Cover Ice Motor on Main PCB.
③ Check the resistance of parallel Connector CN73 -"9", CN70 -"11"
(Definitely plug out prior to repair)

Is the sensing SWITCH connection normal?
- No → Check/Repair the Housing connector
- Yes ↓

Is the switch pressed area normal when motor rotates?
- No → Check/Repair the Motor Rotation pressing area
- Yes ↓

Are the voltage REG1 Heater Sink and CN50-"9", "10" normal?
- Yes → Normal
- No ↓

Operating Condition of Dispenser Open/Close
CN50 - Switch 1,2 Operating

	Close	ing	Open
Ice Route Switch 1 CN50 - "9" (Purple)	0V	5V	0V
Ice Route Switch 2 CN50 - "10" (White)	0V	5V	0V

① Main PCB - Check the wire OPEN/SHORT between the Cover Ice Motor Rotation sensing switches.
② Check the Short of Cover Ice Motor Control Circuit SSR75 in the MAIN PCB.
③ Replace the MAIN PCB or the Dispenser Cover Motor.

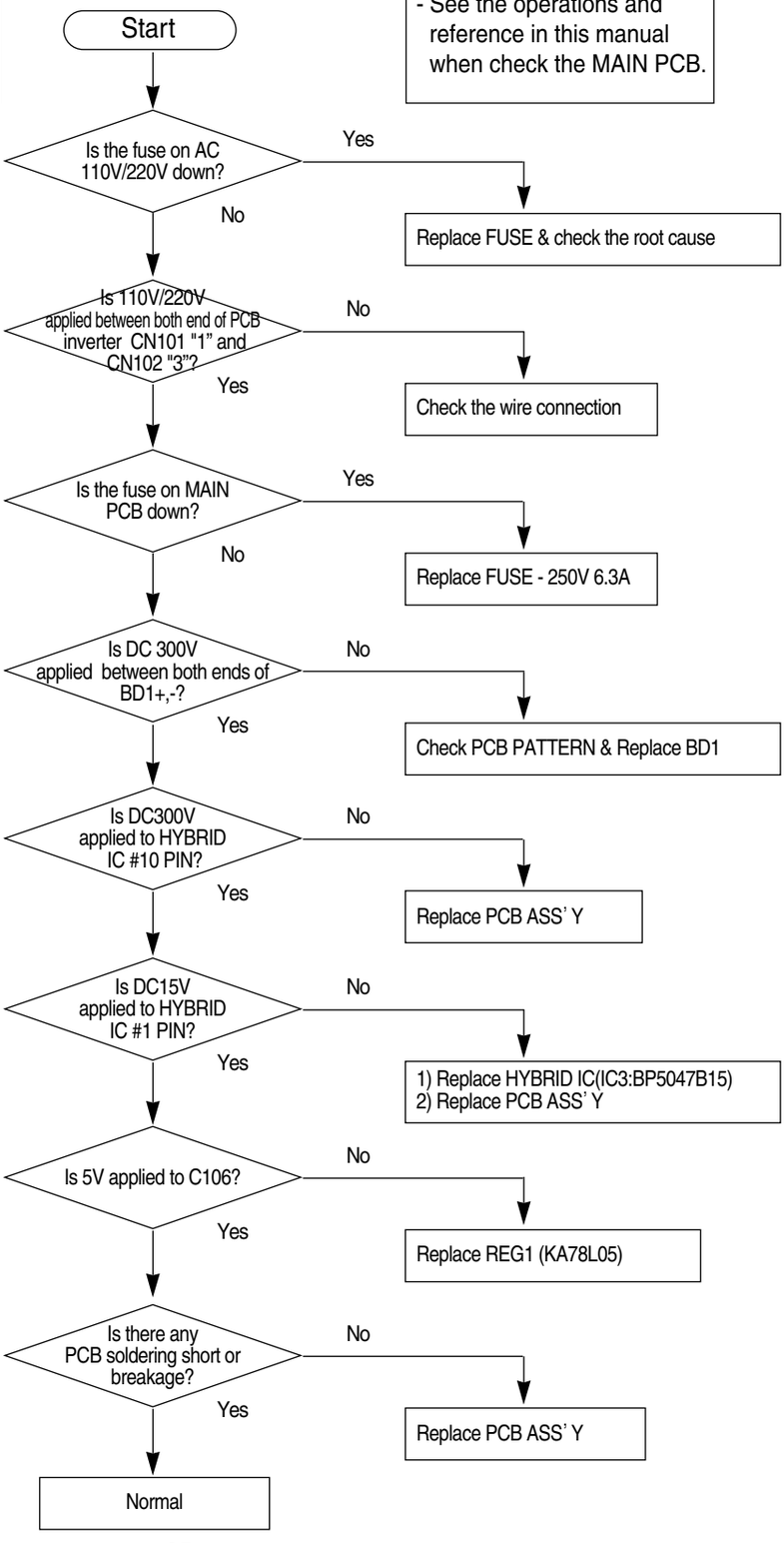
TROUBLESHOOTING

4-2-14. If Inverter PCB Power is not supplied

Caution

At the INVERTER PCB Power, AC 110V/220V power and over DC 300V of high-voltage are applied. Please take care of yourself when repair and measure.

- See the operations and reference in this manual when check the MAIN PCB.



TROUBLESHOOTING

4-2-15. LED blinking frequency depending on protecting functions

If Failure Condition is detected during compressor is operating, immediately stop Compressor operating and stand by 5 minutes. During this 5 minutes, RPM command signal is not available. It means, even if available RPM command signal is applied to the compressor, it does not work and keep standing by.

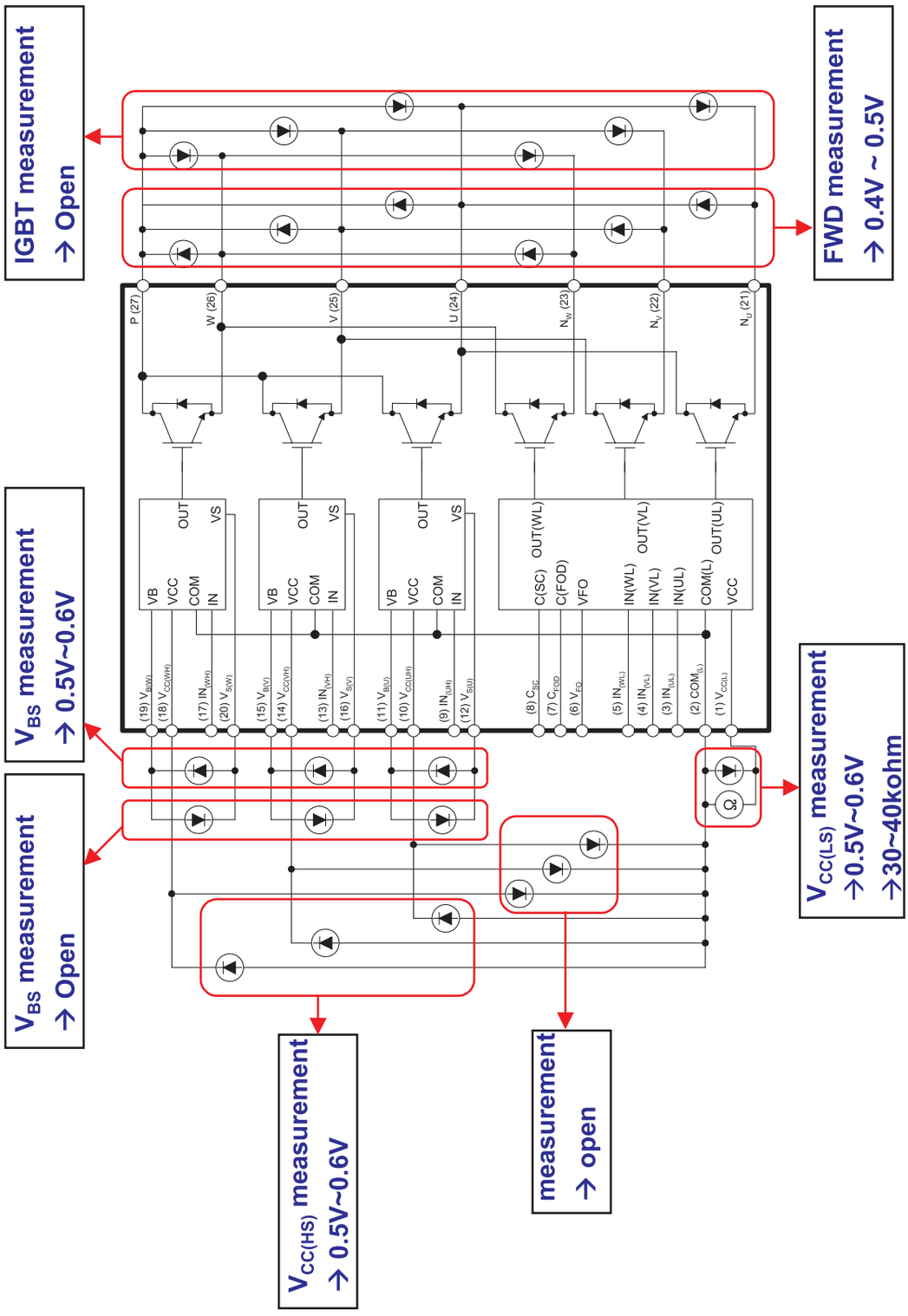
Blinking time is 1 second and dwell time is 2 seconds.

LED Blinking Frequency	Protecting Functions	Remarks
	Normal Operation	N/A
	Starting Failure	1. Short between COMP U,V, and W phase(CN301) 2. Short among IPM Pins(No, #1~33) 3. Drop the IPM operating Voltage under DC 13.5V 4. Other cases, cjeck the COMP, cycle, etc.
	SPM Fault	
	Abnormal Current Detection	1. Open the COMP wire(CN301) 2. Bad condition of R 308(ex. Bad soldering) 3. Other cases, cjeck the COMP, cycle, etc.
	Motor Locked / Over RPM	1. Operating the locked rotor COMP with in 5 second. 2. Operating the COMP under 1000RPM more than 5secod. 3. Short the shunt resistor between leads. 4. Occur the huge change of input voltage in a moment 5. Other cases, check the COMP, cycle,etc.
	Under Voltage	1. Drop the input voltage under AC 53V 2. Short resistor R513(DC link resistor)
	Over Voltage	1. Increase the input voltage over AC 154V 2. Short resistor among R501, R505 and R509 (DC link resistor)

LED blinking frequency depending on protecting functions

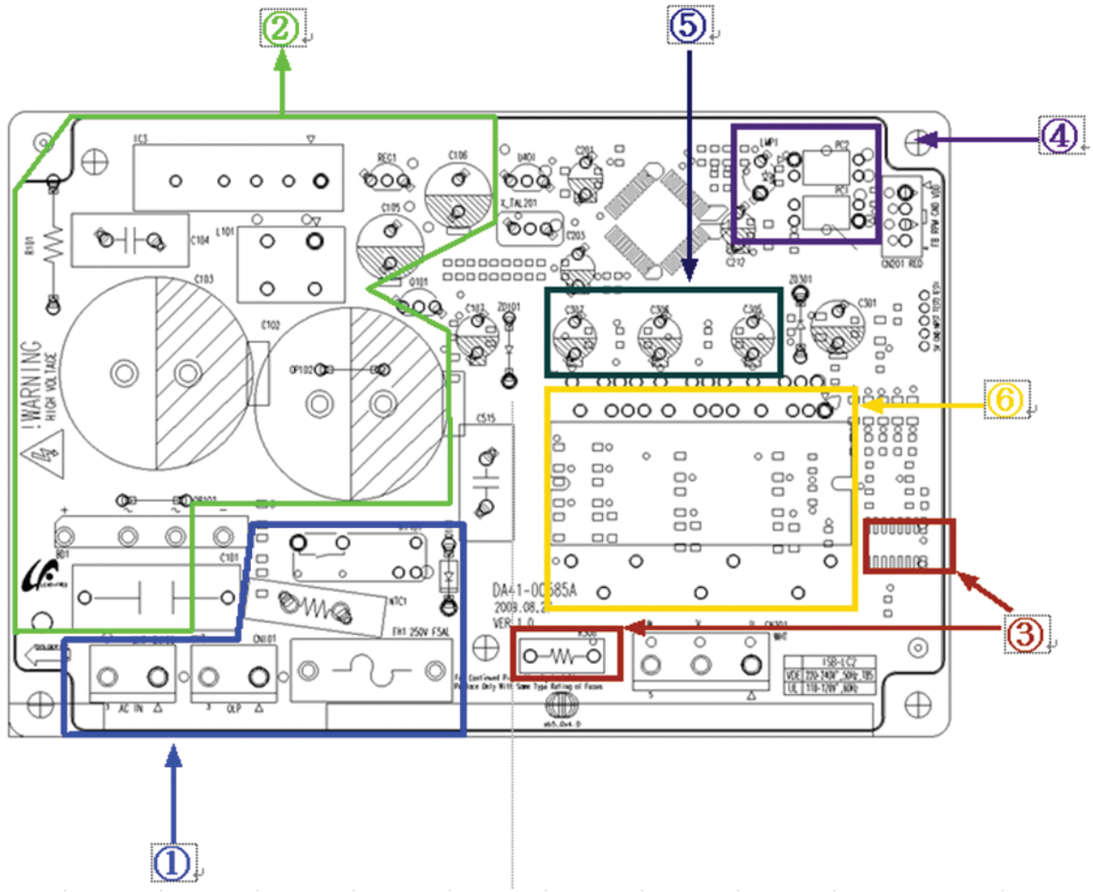
TROUBLESHOOTING

SPM Internal DIODE Voltage



TROUBLESHOOTING

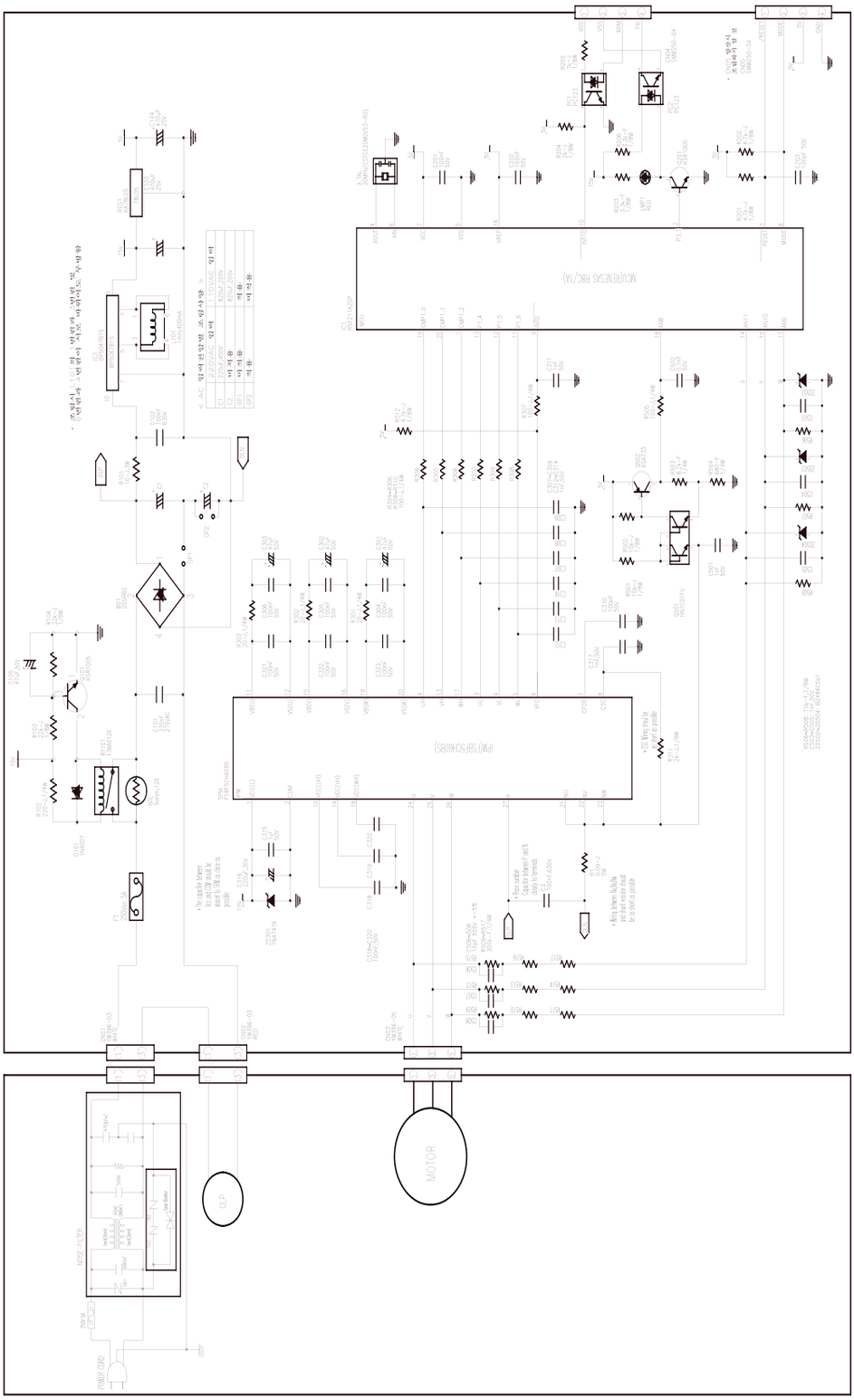
INVERTER CONTROLLER BOARD Connector Location



1. Inrush Current protecting area : It prevents an instant inrush of current generated in condenser when plug in.
2. PCB Power Source : Power source (HYBRID IC). It supplied DC15V and 5V to MICOM.
3. Location sensing resistance area : It senses motor location through the current detected.
4. Current sensing area : It senses the current from the SHUNT resistance and controls PWM DUTY.
5. COMP operating SIGNAL area : It receives COMP operating signal from MAIN PCB and conduct it.
6. BOOTSTRAP live part : Charging circuit that 1GBT of SPM can On/Off securely.

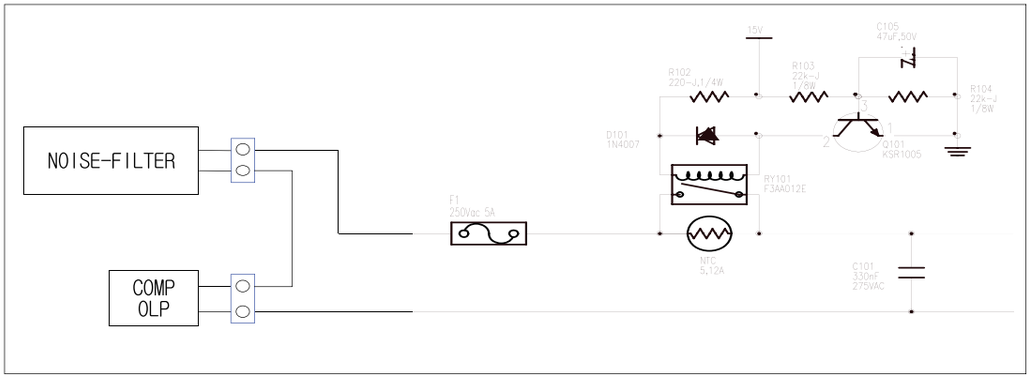
TROUBLESHOOTING

INVERTER PCB Circuit Diagram



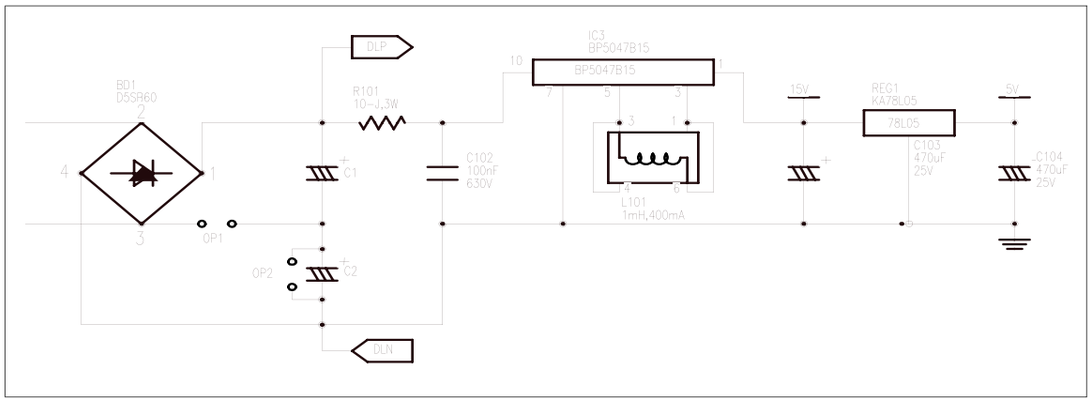
TROUBLESHOOTING

4-3-1. INRUSH CURRENT Protecting Circuit



1) The Power Thermistor prevents an instant inrush of current generated in condenser(C1) when plug in, and Relay(K1) operates 0.1 second after plug in and the power is supplied by relay afterward.
2) The Fuse 1 is designed as 5A to prevent over current applied to Compressor, and Fuse 2 is designed as 1A to protect SMPS area and power in secondary part.

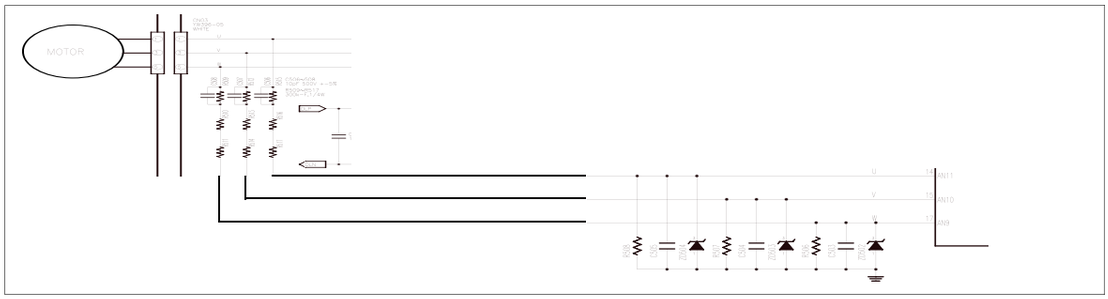
4-3-2. Power Source (HYBRID IC)



1) The power supplied by Noise-Filter is rectified through COMP OLP and the voltage of 300V/DC, rectified through DIODE, is applied in parallel to the SPM and SMPS area, a compressor operating driver.
2) The power source is the circuit which reduces 300V/DC to each 12V/DC and 15V/DC by Hybrid IC, and supplied to operate the MICOM for controlling COMP, and SPM.

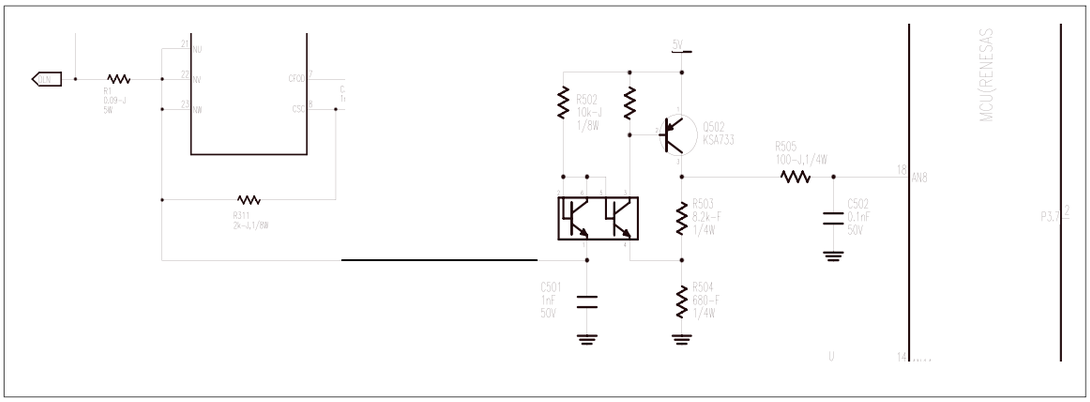
TROUBLESHOOTING

4-3-3. Location Sensing Resistance Area



1) The circuit makes an AD conversion from MICOM for about 3.3V that divides the Motor Back EMF voltage (DC300V) by 3 of 300K resistance and 10K resistance.

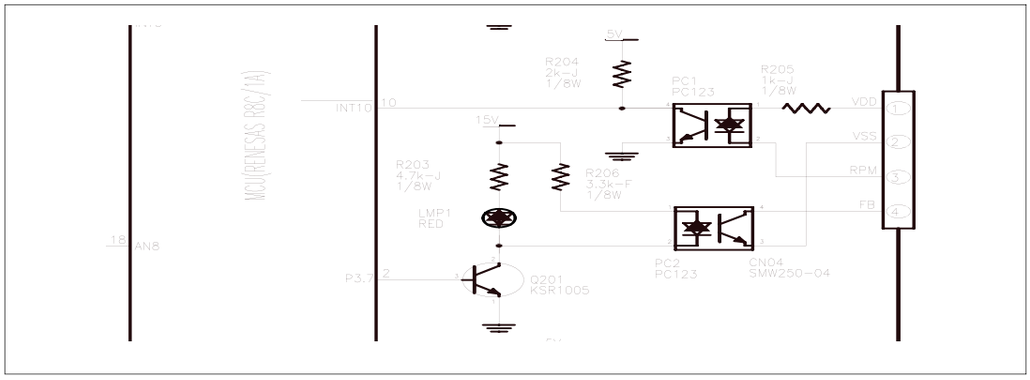
4-3-4. Sensing Current Area



1) It is the circuit which senses the current from the SHUNT resistance and controls PWM DUTY and the converted value as voltage (about 0.5V) is applied to the MICOM PIN #18.

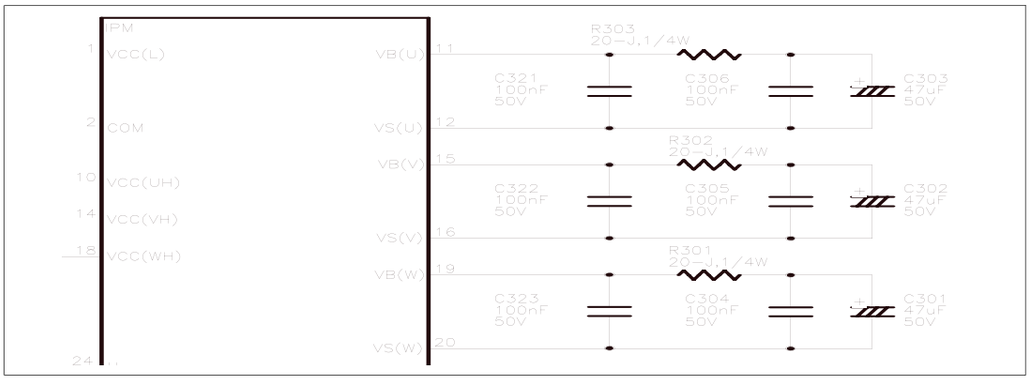
TROUBLESHOOTING

4-3-5. Comp Operating Signal Area



1) It is the circuit which receives COMP operating signal (200HZ ~ 400HZ) from Main PCB and controls the RPM of the Inverter Comp.

4-3-6. BOOTSTRAP Charging Area



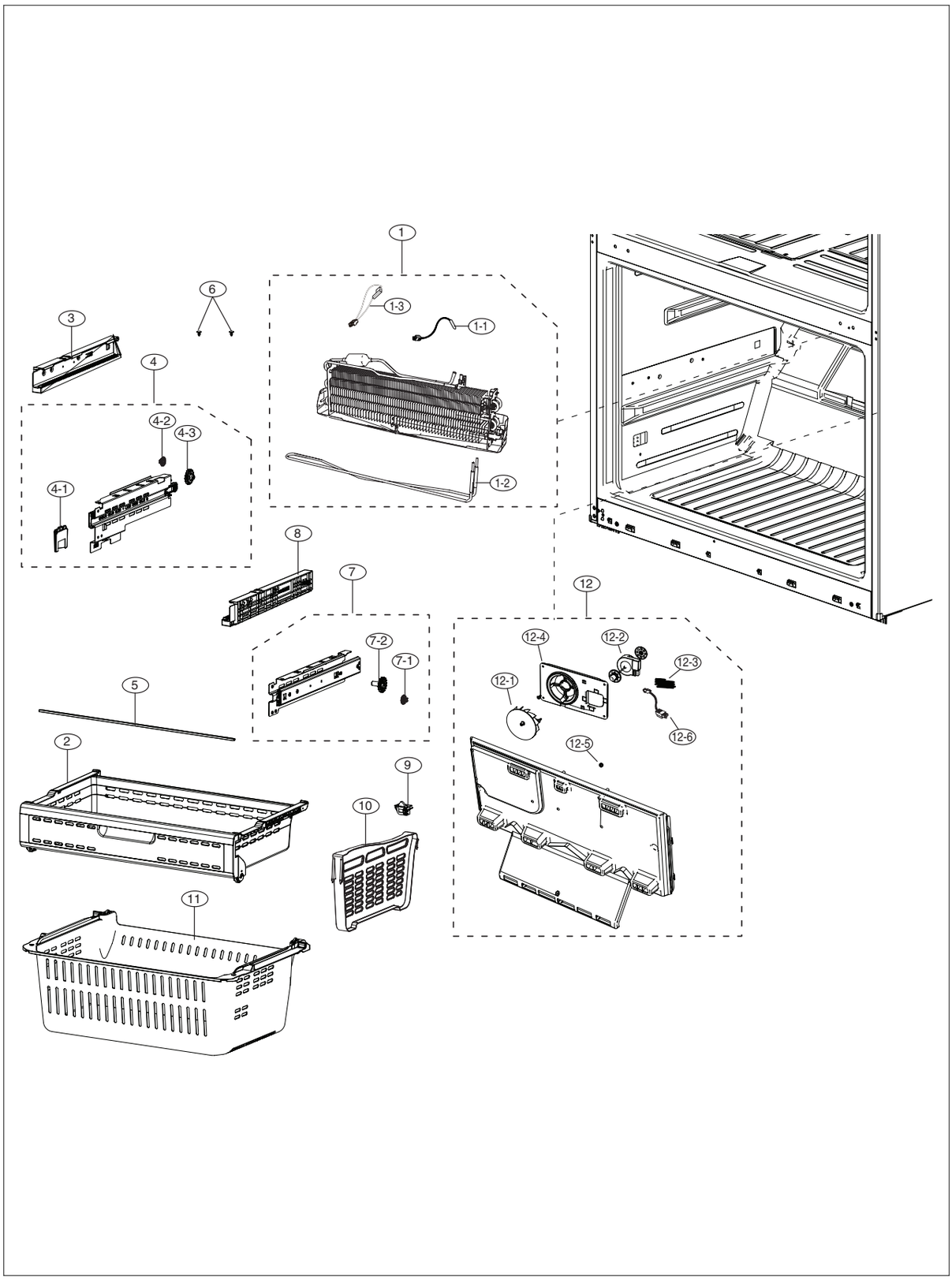
1) It is the charging circuit that 1GBT of SPM can On/Off securely.
This circuit stores the power voltage to operate High-Side Power Switch of SPM and is constituted as 3 Capacitors and charges the capacitors by turning the Low-Side Power Switch "On" just before starting the motor for a certain period of time (1000ms).

5 . EXPLODED VIEW & PARTS LIST

5-1) Freezer · · ·

EXPLODED VIEW& PARTS LIST

5-1) Freezer



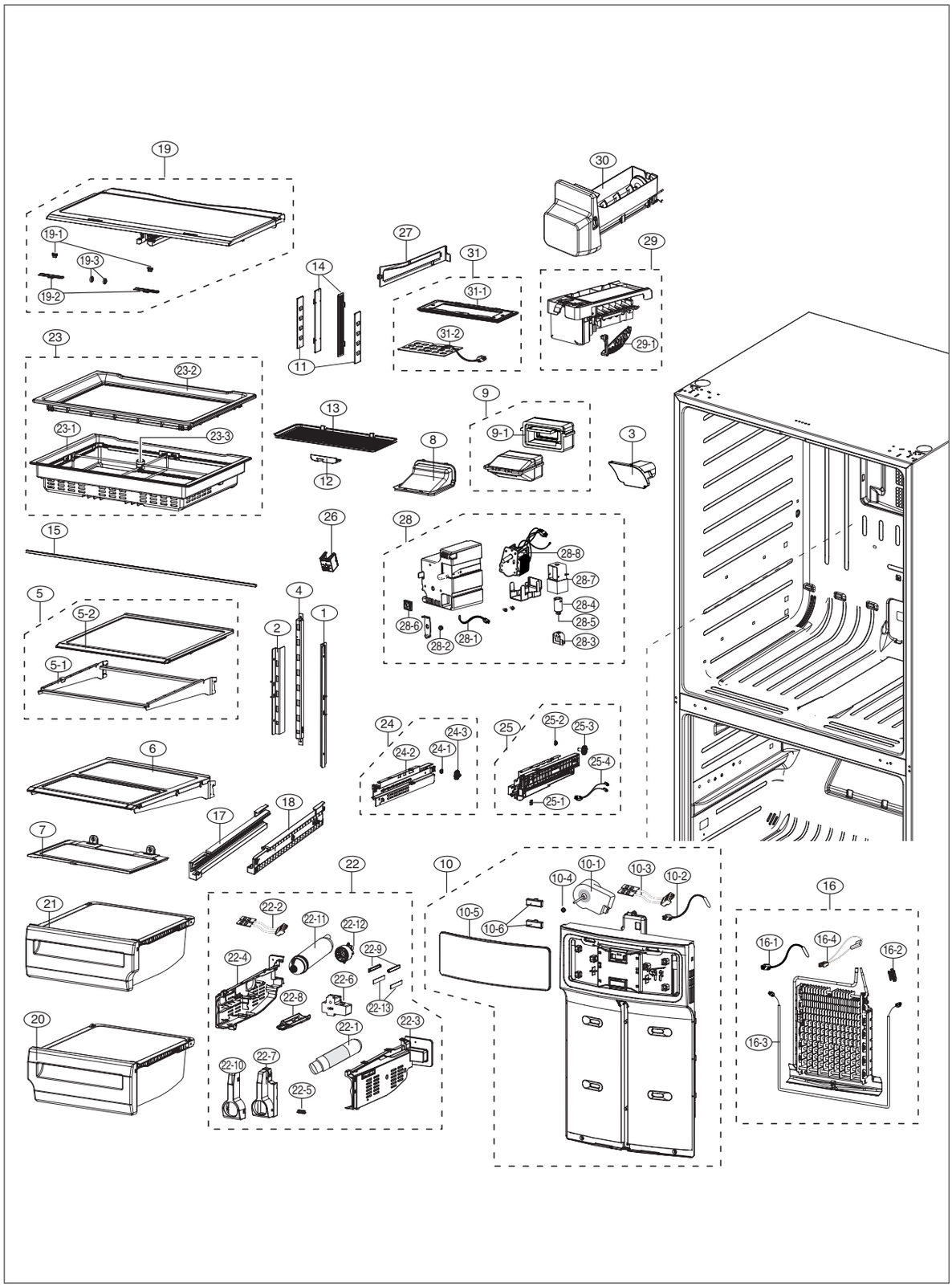
EXPLODED VIEW& PARTS LIST

■ Parts List of Freezer

NO	CODE-NO	PART NAME	SPEC	Q'ty	SERVICE
1	DA96-00631A	ASSY EVAP FRE	AW3 PJT,PIN,120V/180W	1	SA
1-1	DA32-10104N	SENSOR TEMP	PX-41C,AW3,-40~110#,5V,R-DEF	1	SA
1-2	DA47-00318A	HEATER-METAL SHEATH	AW3(F),230W,120V	1	SA
1-3	DA47-00301B	THERMO FUSE-ASSY	HERMES,120V/250V,15A/10	1	SA
2	DA97-08439A	ASSY TRAY-FRE UPP	AW3	1	SA
3	DA63-05400A	COVER-RAIL LOW L	AW3,ABS,COOL WHITE(SC-0	1	SA
4	DA97-08803A	ASSY RAIL-SLIDE LOW L	AW3,STS430,INTERNA	1	SA
4-1	DA34-00047B	SWITCH PRESSURE	AW-PJT,ABS,COOL WHITE	1	SA
4-2	DA61-03154A	FIXER-GEAR	AW-PJT,POM,-,NTR,-	1	SA
4-3	DA66-00751A	GEAR-RAIL L	AW-PJT,POM,NTR	1	SA
5	DA66-00437B	SHAFT-GEAR	AW2,SM25C,715.1,-,-,-,BLACK E	1	SA
6	DA67-00859C	CAP-DOOR HANDLE	CORE,ABS,-,-,-,INOX,SC-0	2	SA
7	DA97-08804A	ASSY RAIL-SLIDE LOW R	AW3,STS430,INTERNA	1	SA
7-1	DA61-03154A	FIXER-GEAR	AW-PJT,POM,-,NTR,-	1	SA
7-2	DA66-00750A	GEAR-RAIL R	AW-PJT,POM,NTR	1	SA
8	DA63-05409A	COVER-RAIL LOW R	AW3,ABS,COOL WHITE(SC-0	1	SA
9	DA34-10120E	SWITCH DOOR-F	-,slide,-,-,250V,-,0.5A,-,	1	SA
10	DA61-05850A	GUIDE-DRAWER BOX	AW3-PJT,PP,COOL WHITE(S	1	SA
11	DA97-08401A	ASSY TRAY-DRAWER BOX	AW3	1	SA
12	DA97-08434A	ASSY COVER EVAP-FRE	AW3	1	SA
12-1	DA31-00123A	FAN-BACKWARD	-,USP 05,ABS(HP-0760),-,2.0	1	SC
12-2	DA31-00146H	MOTOR BLDC	-,2950,-,DC12V,150mA,-,-,2.1W	1	SC
12-3	DA47-00261E	HEATER CORD-DUCT FRE	AW-PJT,P-CORD,7W,12	1	SA
12-4	DA61-03617A	CASE-MOTOR FRE ICE	AW-PJT,PP(BJ-730),-,-	1	SA
12-5	DA61-20128A	SPRING ETC-FAN	-,STS304,PI7.8,-,OD1.0,-,	2	SA
12-6	DA96-00042S	ASSY-HARNESS MOTOR	AW3-PJT,F-FAN,ICE-FAN	1	SA

EXPLODED VIEW & PARTS LIST

5-2) Refrigerator



EXPLODED VIEW& PARTS LIST

■ Parts List of Refrigerator

NO	CODE-NO	PART NAME	SPEC	Q'ty	SERVICE
1	DA61-05897A	ANGLE-SHELF REF SIDE R	AW3,CR,T2.5,COOL	1	SA
2	DA61-05898A	ANGLE-SHELF REF SIDE L	AW3,CR,T2.5,COOL	1	SA
3	DA97-08405A	ASSY CAP-ANGLE	AW3,ABS,COOL WHITE(SC-915	1	SA
4	DA97-08459A	ASSY ANGLE-SHELF REF MID	AW3	1	SA
5	DA97-08461A	ASSY SHELF-SLIDE REF	AW3,WELDING SHELF	2	SNA
5-1	DA97-08480A	ASSY-HANGER SHELF SLIDE	AW3,COOL WHITE,P	2	SA
5-2	DA97-08538A	ASSY SHELF-SLIDE WELD	AW3,Welding shelf	2	SA
6	DA97-08463A	ASSY SHELF-QUICK SPACE	AW3	1	SA
7	DA97-08609A	ASSY SHELF-INSERT REF FOLD	AW3	1	SA
8	DA63-05477A	COVER MOTOR-DAMPER	AW3,HIPS,COOL WHITE(S	1	SA
9	DA97-08430A	ASSY INS-DAMPER CONV	AW3	1	SA
9-1	DA31-00101C	MOTOR DC-DAMPER	NSBY001TJ1,12V,Max 60mA,	1	SA
10	DA97-08433A	ASSY COVER EVAP-REF	AW3	1	SA
10-1	DA31-00146H	MOTOR BLDC	-,2950,-,DC12V,150mA,-,-,2.1W	1	SA
10-2	DA32-00033D	SENSOR TEMP	PX-41C,-40~110#,5V,KET HOUSI	1	SA
10-3	DA41-00676C	PBA-LED LAMP	AW3,BLUE LED,FR-4,40*10,2CH	1	SA
10-4	DA61-20128A	SPRING ETC-FAN	-,STS304,PI7.8,-,OD1.0,-	1	SA
10-5	DA63-05404A	COVER EVAP-REF SUB	AW3,ABS,COOL WHITE(SC	1	SA
10-6	DA63-05410A	COVER-LED	AW3,PP,NTR	2	SA
11	DA41-00519Q	PBA-LED LAMP	AW3,FR-4,170*10,3EA,DC 12V,	2	SA
12	DA61-04285A	GUIDE-FRENCH	AW2-PJT,PC-ABS,-,-,-,COOL-W	1	SA
13	DA63-05397A	COVER LAMP-REF	AW3,SAN,NTR	1	SA
14	DA63-05431A	COVER-LED SIDE	AW3,SAN,NTR	2	SA
15	DA66-00733A	SHAFT-GEAR CONV	AW3,SM25C,743,BLACK	1	SA
16	DA96-00660A	ASSY EVAP REF	AW2 ND,PIN,120V/120W	1	SA
16-1	DA32-10104N	SENSOR TEMP	PX-41C,AW3,-40~110#,5V,R-DEF	1	SA
16-2	DA61-03683A	FIXER-SENSER	AW-PJT,PP,-,NTR,FH-44N	1	SA
16-3	DA47-00244W	HEATER-METAL SHEATH	AW3(R),120W,120V	1	SA
16-4	DA47-00301D	THERMO FUSE-ASSY	ARAM,120V/250V,15A/10A,	1	SA
17	DA97-04839A	ASSY RAIL-VEG L	AW-PJT,-,-,-,-,-	1	SA
18	DA97-04840A	ASSY RAIL-VEG R	AW-PJT,-,-,-,-,-	1	SA
19	DA97-08402A	ASSY COVER-VEG REF	AW3	1	SA
19-1	DA64-03209A	KNOB-HUMIDITY	AW3-PJT,ABS,NTR,Chromium P	2	SA
19-2	DA66-00718A	LEVER-HUMIDITY	AW3,HIPS,COOL WHITE(SC-03	2	SA
19-3	DA66-10104A	ROLLER-FRE	POM,-,-,D22,-,-,	2	SA
19-4	DA61-05854A	CASE LAMP-REF	AW3,ABS,COOL WHITE(SC-0274	1	SA
19-5	DA96-00398H	ASSY-LAMP LED	AW3,18EA	1	SA
20	DA97-08437A	ASSY CASE-VEG R	AW3,New Filter	1	SA
21	DA97-08438A	ASSY CASE-VEG L	AW3,New Filter	1	SA
22	DA97-08520A	ASSY CASE-WATER FILTER	AW3,WHITE,ASSY	1	SNA
22-1	DA29-00019A	FILTER WATER	SSEDA	1	SA
22-2	DA41-00519S	PBA-LED LAMP	AW3,FR-4,65*10,3CHIP 2EA *	1	SA
22-3	DA61-05868A	CASE-FILTER TANK R	AW3,HIPS,DA WHITE(W92	1	SA
22-4	DA61-05869A	CASE-FILTER TANK L	AW3,HIPS,DA WHITE(W92	1	SA
22-5	DA61-05870A	SUPPORT-CASE FILTER	AW3,SILICON,WHITE	1	SA
22-6	DA62-02491A	INSULATION-WATER FILTER	AW3,FOAM PS,NTR	1	SA
22-7	DA63-05406A	COVER-FILTER TANK	AW3,ABS,COOL WHITE(SC-	1	SA
22-8	DA63-05407A	TRAY-WATER FILTER	AW3,HIPS,DA WHITE(W921	1	SA
22-9	DA63-05408A	COVER-LED FILTER	AW3,SAN,NTR	2	SA

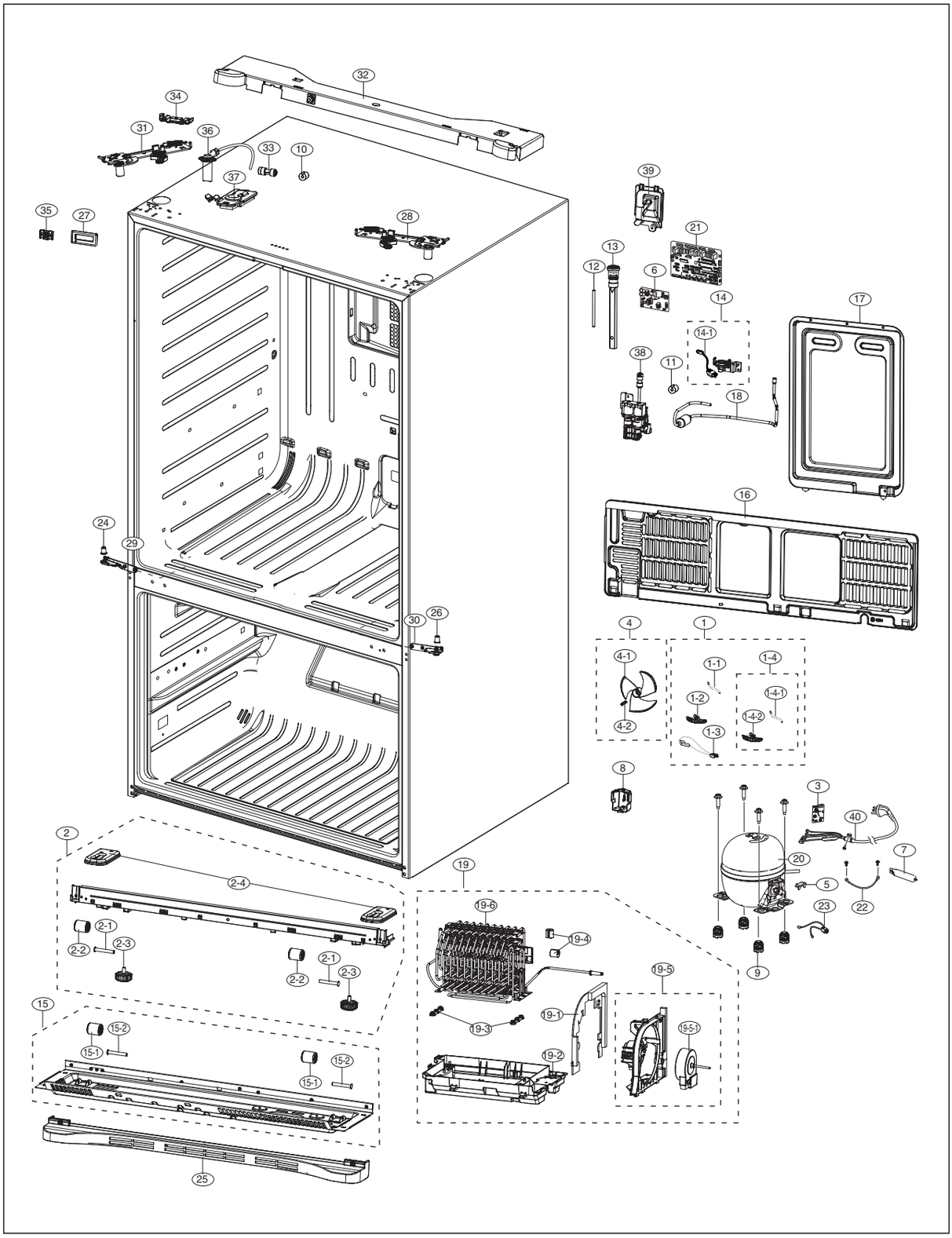
EXPLODED VIEW& PARTS LIST

■ Parts List of Refrigerator

NO	CODE-NO	PART NAME	SPEC	Q'ty	SERVICE
22-10	DA67-02505A	CAP-FILTER TANK	AW3,SAN,NTR	1	SA
22-11	DA97-08005B	ASSY TANK WATER	SSEDA,ASSY,NTR	1	SA
22-12	DA97-08006B	ASSY CASE-FILTER	AW3,WHITE	1	SA
22-13	DA63-05928A	COVER-SEAL LED	AW3,PET,T0.5,TRANSPARENT	2	SA
23	DA97-08528A	ASSY CASE-CONV	AW3	1	SNA
23-1	DA61-05860A	CASE-CONVERTIBLE	AW3,ABS,COOL WHITE(SC-0	1	SA
23-2	DA63-05401A	COVER-CONVERTIBLE	AW3,ABS,COOL WHITE(SCAW3	1	SA
23-3	DA97-08517A	ASSY-DIVIDER SMART	AW3,STS430,INTERN	1	SA
24	DA97-08808A	ASSY RAIL-SLIDE CONV L	AW-PJT,POM,-,NTR,-	1	SA
24-1	DA61-03154A	FIXER-GEAR	AW3 PJT,ABS,COOL WHITE	1	SA
24-2	DA63-05451A	COVER-RAIL CONV L	AW-PJT,POM,-,-,-,NTR,-,-,-	1	SA
24-3	DA66-00751A	GEAR-L	AW-PJT,POM,NTR	1	SA
25	DA97-08809A	ASSY RAIL-SLIDE CONV R	CORE-PJT,Strontium ferrite,	1	SA
25-1	DA61-02738A	MAGNET-ASS'Y	AW-PJT,POM,-,NTR,-	1	SA
25-2	DA61-03154A	FIXER-GEAR	AW-PJT,POM,-,-,-,NTR,-,-,-	1	SA
25-3	DA66-00750A	GEAR-R	AW-PJT,POM,NTR	1	SA
25-4	DA34-00043H	SWITCH REED-ASSY	NEXT-PJT,GALVA,T0.	1	SA
26	DA63-02902B	COVER-FIXER HOUSING V	AW-PJT,HIPS,COOLAW2,115V/	3	SA
27	DA63-03691A	COVER-HARNESS ICE ROOM	60Hz	1	SA
28	DA97-05246G	ASSY CASE-AUGER MOTOR	-,-,-,-,-,-,TEMP CAP TYPE,-,	1	SA
28-1	DA32-10105B	SENSOR TEMP	SR-S7180,STS304,PI7.	1	SA
28-2	DA61-20140A	SPRING ETC-SOLENOID	-,POM,-,-,-,-,-	1	SA
28-3	DA61-60001A	SLIDER-SOLENOID DISP	-,POM,-,-,-,SC-93438R,-	1	SA
28-4	DA63-90008A	BUSH-SOLENOID	POM,-,-,-,-,SC-93438R	1	SA
28-5	DA66-90003A	GEAR-SOLENOID	ZIPEL,STS420,T1,-,CLIP,STS420-	1	SA
28-6	DA71-00163A	FIXER-NUT	SR-S6586B,-,-,-,-,CUBE-SN	1	SA
28-7	DA74-40151G	VALVE-SOLENOID	AW09-PJT,100~240V	1	SA
28-8	DA96-00036W	ASSY W/HARNESS-SUB EM	AW-PJT,115V,60Hz,-,-,-	1	SA
29	DA97-07365A	ASSY ICE MAKER	AW-PJT,PC-ABS,COOL-WHITE	1	SA
29-1	DA61-05023A	GUIDE-ICE FULL	AW-PJT,90,490,WHT,B	1	SA
30	DA97-10609A	ASSY TRAY-ICE BUCKET	AW3,LED 18EA	1	SA
31	DA97-08428A	ASSY CASE LAMP-REF	AW3,ABS,COOL WHITE	1	SNA
31-1	DA61-05854A	CASE LAMP-REF	AW3,18EA	1	SA
31-2	DA96-00398H	ASSY-LAMP LED		1	SA

EXPLODED VIEW& PARTS LIST

5-3) Cabinet



EXPLODED VIEW& PARTS LIST

■ Parts List of Cabinet

NO	CODE-NO	PART NAME	SPEC	Q'ty	SERVICE
1	DA96-00639A	ASSY W/HARNESS-MAIN	AW3-PJT	1	SNA
1-1	DA32-00033C	SENSOR TEMP	PX-41C,-40~110#,5V,JST HOUSI	1	SA
1-2	DA63-05470A	COVER SENSOR-FRE	AW3,HIPS,COOL WHITE(SCAW09-	1	SA
1-3	DA96-00562A	ASSY W/HARNESS-COND	PJT,100~127V	1	SA
1-4	DA97-08608A	ASSY COVER-SENSOR FRE	AW3	1	SNA
1-4-1	DA32-00033C	SENSOR TEMP	PX-41C,-40~110#,5V,JST HOUSI	1	SA
1-4-2	DA63-05470A	COVER SENSOR-FRE	AW3,HIPS,COOL WHITE(SCAW2-	1	SA
2	DA97-06487R	ASSY CABINET-BOTTOM FRONT	ND,THAI-SI	1	SNA
2-1	DA61-01920A	CASTER-RIVET	(ZPC2),MSWR10,OD8.0,L54,-,-	2	SA
2-2	DA61-04702A	CASTER-FRONT	AW-PJT,PP,-,35,NTR,35,PP+TP	2	SA
2-3	DA61-04977A	FOOT-FRONT	AW2-PJT,PP+MSWR10,-,BLACK,-,-	2	SA
2-4	DA97-07147A	ASSY SUPPORT-FOOT FRONT	AW2-PJT,-,-,-,-,	2	SA
3	DA27-00022A	COIL FILTER-EMI	AW3-PJT,20mH,40m,42?,82	1	SA
4	DA31-00010D	FAN-ASS'Y	-,ET,ZIPEL,ASSY,-,UNIT,#150	1	SA
4-1	DA31-00015C	FAN-TURBO	-,ET-PJT,ABS+GLASS FIBE,-,GR-4	1	SA
4-2	DA61-20128A	SPRING ETC-FAN	-,STS304,PI7.8,-,OD1.0,-,	1	SA
5	DA34-00004D	RELAY PROTECTOR O/L	4TM445PHBYY-82,BK190	1	SA
6	DA41-00614B	PBA SUB-INVERTER	AW3-PJT,TOP,FR-4,1.6T*1	1	SA
7	DA62-02614A	DRYER-SINGLE	HAEMIL_10,C1220T,OD18.85,L1	1	SA
8	DA63-01866A	COVER RELAY	NORYL,T2.0,SSEC,BLACK,HOOK	1	SA
9	DA63-02617A	GROMMET COMP	USP05,EPDM,OD18.5,BLACK	4	SA
10	DA63-40171B	GROMMET-SUCT PIPE A	-,NBR,OD20,ID4,L20,-	1	SA
11	DA63-40171D	GROMMET-SUCT PIPE B	RAIL L19.5,NR,-,OD20	1	SA
12	DA73-10190U	PIPE-CONNECT DISC,B	TD-PJT,C1220-T,-,6.3	1	SA
13	DA97-04049E	ASSY CAP-DRAIN	AW3	2	SA
14	DA97-07070A	ASSY MOTOR-STEP VALVE	CULLINAN,MOLD BRAC	1	SA
14-1	DA39-00415A	WIRE HARNESS-STEP VALVE	GUGGENHEIM,PVC-T	1	SA
15	DA97-07547A	ASSY CHASSIS-COMP	AW2-CD,-,-,-,-,-,PP+TP	1	SNA
15-1	DA61-04703A	CASTER-REAR	AW-PJT,PP,-,35,NTR,35,PP+TPE	2	SA
15-2	DA66-00649A	SHAFT-CASTER	AW-PJT,MSWR10,L46,OD8.2,-,-	2	SA
16	DA97-08441A	ASSY COVER-COMP	AW3	1	SA
17	DA97-08442A	ASSY COVER PCB PANEL	AW3	1	SA
18	DA97-08458A	ASSY PIPE CONNECT	AW3,4 DOOR	1	SA
19	DA97-08460A	ASSY TRAY-DRAIN WATER	AW3,4 DOOR	1	SNA
19-1	DA62-02507A	SEAL-SUB CONDENSER	AW3,FOAM-PE,BLACK,T3	1	SA
19-2	DA63-05084A	TRAY-DRAIN WATER	AW2-PJT,PP,NTR	1	SA
19-3	DA63-40128A	GROMMET-SUB COND	-,NBR,-,-,-,-,-,DARK-	2	SA
19-4	DA63-40171B	GROMMET-SUCT PIPE A	-,NBR,OD20,ID4,L20,-	2	SA
19-5	DA97-08462A	ASSY SUPPORT-CIRCUIT MOTOR	AW3,4 DOOR	1	SA
19-5-1	DA31-00146B	MOTOR BLDC	DRCP5030LA,1560,-,DC12V,230mA	1	SA
19-6	DA97-08464A	ASSY PIPE SPIRAL COND	AW3	1	SA
20	MKV190CL2B/E01	COMPRESSOR	115V~60HZ,BLDC,FAN,MKV	1	SA
21	DA41-00684A	PBA MAIN	AW3-PJT,ASSY CYCLE,FR-1,210*197	1	SA
22	DA39-20389L	WIRE HARNESS-EARTH	TMF/LMF,-,-,-,-,-,AWG	1	SA
23	DA39-00154J	WIRE HARNESS-COMP	AW3-PJT,UL1015AWG18,35	1	SA
24	DA63-02905A	GROMMET HINGE-MID,R	NEXT,POM,T2.0,-,-,-	1	SA
25	DA63-04975A	COVER-LEG FRONT	AW2 CD,Creamy STS	1	SA
	DA63-04975B	COVER-LEG FRONT	AW2 CD, I-Black	1	SA
	DA63-04975C	COVER-LEG FRONT	AW2 CD, Snow White	1	SA
26	DA63-02905A	GROMMET HINGE-MID R	NEXT,POM,T2.0,-,-,-,-,WHITE,-	2	SA
27	DA67-02304A	CAP-TOP TABLE	AW2 CD, CREAMY STS	2	SA
	DA67-02304B	CAP-TOP TABLE	AW2 CD, I BLACK	2	SA

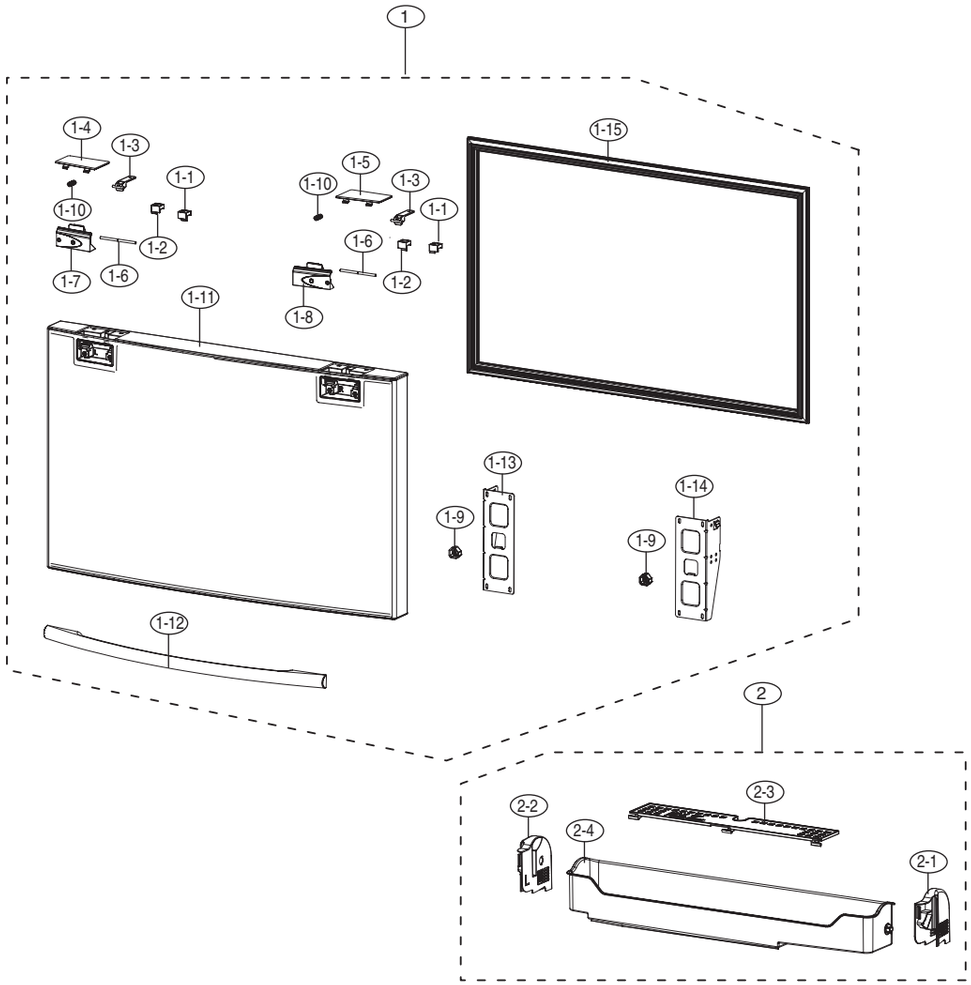
EXPLODED VIEW& PARTS LIST

■ Parts List of Cabinet

NO	CODE-NO	PART NAME	SPEC	Q'ty	SERVICE
27	DA67-02304C	CAP-TOP TABLE	AW2 CD, Snow White	2	SA
28	DA97-04875G	ASSY HINGE UPP-R	AW2,Creamy STS	1	SA
	DA97-04875F	ASSY HINGE UPP-R	AW2, I-Black	1	SA
	DA97-04875H	ASSY HINGE UPP-R	AW2, Snow White	1	SA
29	DA97-07514D	ASSY HINGE MID-L	AW2-ND,T4.5,Ni-Cr Plate	1	SA
30	DA97-07515A	ASSY HINGE MID-R	AW2 CD-PJT,T4.5,-,-,Ni-	1	SA
31	DA97-07822F	ASSY HINGE-UPP L	AW2,Creamy STS	1	SA
	DA97-07822G	ASSY HINGE-UPP L	AW2, I-Black	1	SA
	DA97-07822H	ASSY HINGE-UPP L	AW2, Snow White	1	SA
32	DA97-08448A	ASSY TOP-TABLE	AW3,Creamy STS	1	SA
	DA97-08448B	ASSY TOP-TABLE	AW3, I-Black	1	SA
	DA97-08448C	ASSY TOP-TABLE	AW3, Snow White	1	SA
33	DA62-01627B	TUBE-FITTING-B	POM,CAP FITTING ADD	1	SA
34	DA61-02482A	FIXER HOSE	NEXT700SD,PA	1	SA
35	DA61-06150A	FIXER HOSE	AW3,NY-66,NTR	3	SA
36	DA97-05362C	ASSY PIPE-WATER	AW-PJT(BEST),CD,TIM	1	SA
37	DA97-07556A	ASSY COVER-PIPE WATER	AW2-C/D-PJT,-,-,-,	1	SA
38	DA97-07827E	ASSY VALVE WATER	AW3,110-127V	1	SA
39	DA97-08413A	ASSY COVER-TUBE FILTER	AW3	1	SA
40	3903-000519	CBF-POWER CORD	AT,USA,MEXICO,SPT-3,HOUSI	1	SA

EXPLODED VIEW& PARTS LIST

5-4) Disassembly of Door freezer



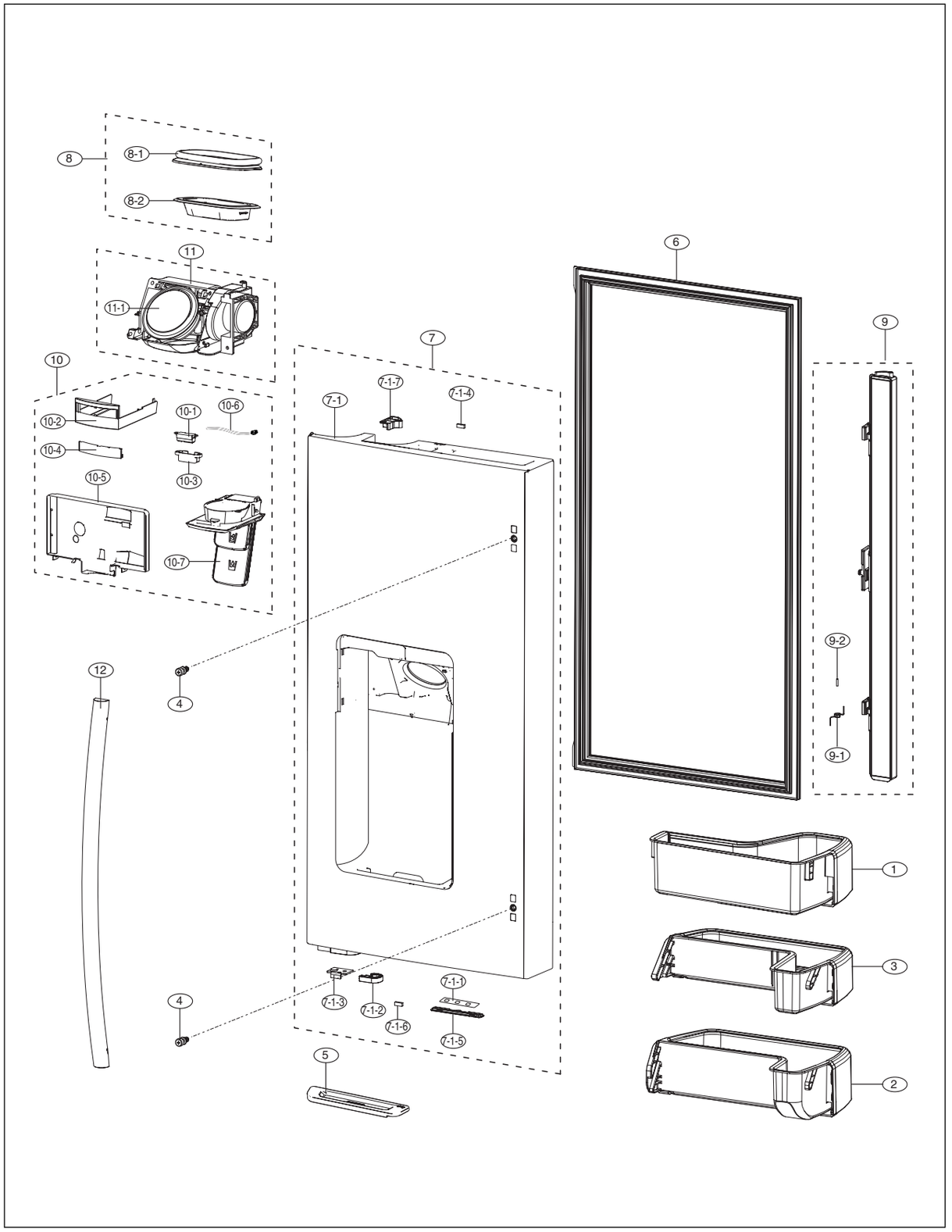
EXPLODED VIEW& PARTS LIST

■ Parts List of Refrigerator Door-freezer

NO	CODE-NO	PART NAME	SPEC	Q'ty	SERVICE
1	DA91-03036A	ASSY DOOR-FRE	AW3	1	SNA
1-1	DA61-05899A	FIXER-SHAFT R	AW3,POM,NTR	2	SA
1-2	DA61-05930A	FIXER-SHAFT L	AW3,POM,BLACK(SC-00477R)	2	SA
1-3	DA61-06014A	SLIDER-EASY HANDLE	AW3,RS,PN	2	SA
	DA61-06014B	SLIDER-EASY HANDLE	AW3,BP	2	SA
	DA61-06014C	SLIDER-EASY HANDLE	AW3,WP	2	SA
1-4	DA63-05432A	COVER-HANDLE L	AW3,Creamy STS	1	SA
	DA63-05432B	COVER-HANDLE L	AW3, I-Black	1	SA
	DA63-05432C	COVER-HANDLE L	AW3, Snow White	1	SA
1-5	DA63-05433A	COVER-HANDLE R	AW3,Creamy STS	1	SA
	DA63-05433B	COVER-HANDLE R	AW3, I-Black	1	SA
	DA63-05433C	COVER-HANDLE R	AW3, Snow White	1	SA
1-6	DA66-00579B	SHAFT-CAP HANDLE	AW3,MSWR10,92,5,ZPC3(Y)	2	SA
1-7	DA67-02512A	CAP-HANDLE CONV L	AW3,Creamy STS	1	SA
	DA67-02512B	CAP-HANDLE CONV L	AW3, I-Black	1	SA
	DA67-02512C	CAP-HANDLE CONV L	AW3, Snow White	1	SA
1-8	DA67-02513A	CAP-HANDLE CONV R	AW3,Creamy STS	1	SA
	DA67-02513B	CAP-HANDLE CONV R	AW3, I-Black	1	SA
	DA67-02513C	CAP-HANDLE CONV R	AW3, Snow White	1	SA
1-9	DA61-02904B	SUPPORT-DOOR POSITION,IN	AW-PJT,HIPS,-,-	2	SA
1-10	DA61-04335B	SPRING ETC-EASY HANDLE	08 AW1,2-PJT,HSWR	2	SA
1-11	DA91-03007A	ASSY DOOR FOAM FRE	AW3,RS	1	SA
	DA91-03007B	ASSY DOOR FOAM FRE	AW3,BP	1	SA
	DA91-03007C	ASSY DOOR FOAM FRE	AW3,WP	1	SA
	DA91-03007D	ASSY DOOR FOAM FRE	AW3,PN	1	SA
1-12	DA64-02550A	HANDLE BAR-FRE	AW2-PJT,STS304,-,-,730,-,	1	SA
	DA64-03246A	HANDLE BAR-FRE	AW2-PJT,BLACK	1	SA
	DA64-03246B	HANDLE BAR-FRE	AW2-PJT,WHITE	1	SA
1-13	DA61-03153B	HANGER-RAIL FRONT L	AW-PJT,SECC1,T2.0,CO	1	SA
1-14	DA61-03155B	HANGER-RAIL FRONT R	AW-PJT,SECC1,T2.0,CO	1	SA
1-15	DA97-05557Q	ASSY-GASKET DOOR FRE	AW3_FRE,GRAY	1	SA
	DA97-05557P	ASSY-GASKET DOOR FRE	AW3_FRE,BLACK	1	SA
2	DA97-08407A	ASSY GUARD-FRE	AW3	1	SNA
2-1	DA61-05846A	SUPPORT-GUARD FRE R	AW3,HIPS,COOL WHITE(	1	SA
2-2	DA61-05847A	SUPPORT-GUARD FRE L	AW3,HIPS,COOL WHITE(	1	SA
2-3	DA63-03459A	GUARD-FRE FLIP	AW-PJT,HIPS(HR-1360),-,-,	1	SA
2-4	DA63-05386A	GUARD-FRE	AW3,HIPS,COOL WHITE(SC-02740R)	1	SA

EXPLODED VIEW & PARTS LIST

5-5) Disassembly of Door Refrigerator L



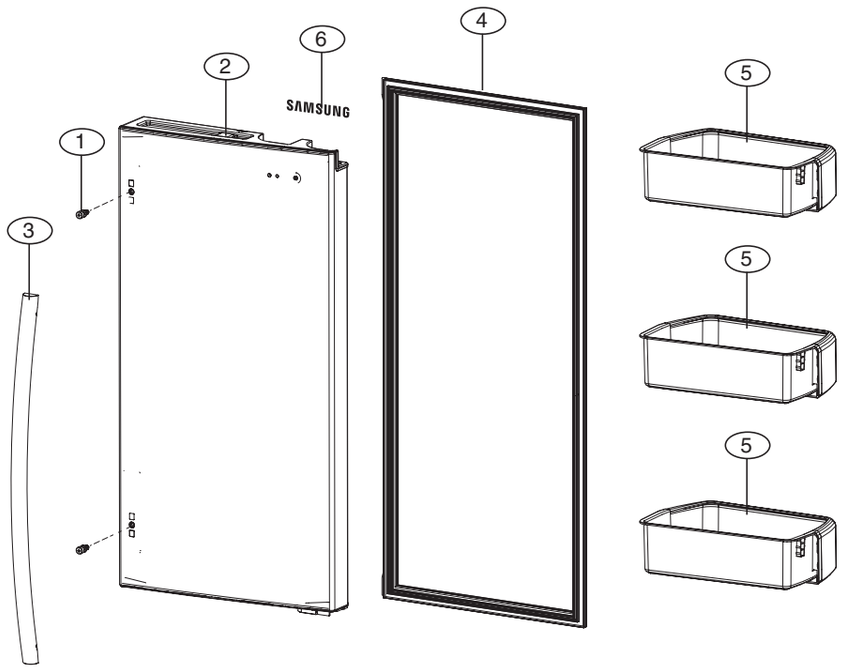
EXPLODED VIEW& PARTS LIST

■ Parts List of Door Refrigerator -L

NO	CODE-NO	PART NAME	SPEC	Q'ty	SERVICE
1	DA97-08409A	ASSY GUARD-DISP	AW3	1	SA
2	DA97-08400A	ASSY GUARD REF-L	AW3	1	SA
3	DA97-08408A	ASSY GUARD REF-MID	AW3	1	SA
4	DA61-03734A	FIXER-HANDLE	AW-PJT,SWRCH18A,M8,-,GE	2	SA
5	DA63-05506A	TRAY-DISPENSER	AW3, Creamy STS	1	SA
	DA63-05506B	TRAY-DISPENSER	AW3, I-Black	1	SA
	DA63-05506C	TRAY-DISPENSER	AW3, Snow White	1	SA
6	DA97-05253R	ASSY-GASKET DOOR REF	AW3,GRAY	1	SA
	DA97-05253Q	ASSY-GASKET DOOR REF	AW3,BLACK	1	SA
7	DA91-03040A	ASSY DOOR FOAM REF-L	AW3,RS	1	SA
	DA91-03040B	ASSY DOOR FOAM REF-L	AW3,BP	1	SA
	DA91-03040C	ASSY DOOR FOAM REF-L	AW3,WP	1	SA
	DA91-03040D	ASSY DOOR FOAM REF-L	AW3,PN	1	SA
7-1	DA97-08516A	ASSY-PLATE DOOR REF L	AW3,STS304,REAL-ST	1	SNA
7-1-1	DA41-00519R	PBA-LED LAMP	AW3,FR-4,65*10,3CHIP 3EA,DC	1	SA
7-1-2	DA61-02383E	SUPPORT-DOOR CLOSE	AW, Creamy STS	1	SA
	DA61-02383A	SUPPORT-DOOR CLOSE	AW, I-Black	1	SA
	DA61-02383C	SUPPORT-DOOR CLOSE	AW, Snow White	1	SA
7-1-3	DA61-03211A	STOPPER-DOOR L	AW-PJT,SHP1,T2.9,-,-,-,-	1	SA
7-1-4	DA61-03769A	MAGNET	HERMES,-,5x7x18,-,-,1200Gauss	1	SA
7-1-5	DA63-05524A	COVER-CAP DOOR LED	AW3,SAN,NTR	1	SA
7-1-6	DA63-40294A	GROMMET-STOPPER	T3XW8XL8,NR,-,-,-,-,-,-,	1	SA
7-1-7	DA66-00442B	CAM-AUTO CLOSE L	AW, Creamy STS	1	SA
	DA66-00442A	CAM-AUTO CLOSE L	AW, I-Black	1	SA
	DA66-00442C	CAM-AUTO CLOSE L	AW, Snow White	1	SA
8	DA97-05353A	ASSY CAP-CHUTE ICE	AW-PJT(BEST),-,-,-,-,	1	SA
8-1	DA63-03698A	GASKET-CAP CHUTE ICE	AW-PJT(BEST),SILICO	1	SA
8-2	DA67-01729A	CAP-CHUTE ICE	AW-PJT,ABS(HG-0760H),-,-,-	1	SA
9	DA97-08512A	ASSY-FRENCH	AW3,THAI-SILVER	1	SA
	DA97-08512B	ASSY-FRENCH	AW3,BLACK	1	SA
	DA97-08512C	ASSY-FRENCH	AW3,WHITE	1	SA
9-1	DA81-01345B	SPRING-ETC FRENCH	STS304,PI1.4,3.5,-,-,-,-	1	SA
9-2	DA81-01346A	PIN-FRENCH SPRING	RD-PVC,WHITE,-,-,-,-,-	1	SA
10	DA97-08518A	ASSY COVER DISP	AW3,RS	1	SA
	DA97-08679A	ASSY COVER DISP	AW3,BP	1	SA
	DA97-08679B	ASSY COVER DISP	AW3,WP	1	SA
	DA97-08679C	ASSY COVER DISP	AW3,PN	1	SA
10-1	3201-001611	SENSOR	GP2Y0A21YK,-10to+60C,5V,DISTANCE	1	SA
10-2	DA61-06020A	GUIDE-LAMP DISPENSER	AW3,AL,VERSAILLES-S	1	SA
10-3	DA63-05448A	COVER-SENSOR DISPENSER	AW3,PC,NTR	1	SA
10-4	DA63-05450A	COVER-TOUCH SWITCH	AW3,ABS,COOL WHITE(SC	1	SA
10-5	DA63-05507A	COVER PCB-PANEL REAR	AW3,HIPS,NTR	1	SA
10-6	DA96-00669A	ASSY W/HARNESS-DISTANCE SENSOR	AW3-PJT	1	SA
10-7	DA97-08519A	ASSY LEVER-DISPENSER	AW3,STS COVERING	1	SA
11	DA97-08680A	ASSY CASE-ICE ROUTE	AW3	1	SA
11-1	DA97-05368A	ASSY COVER-ICE ROUTE	AW-PJT,-,-,-,-,-,-,	1	SA
12	DA64-03248A	HANDLE-BAR REF	AW3,STAINLESS-STS304	1	SA
	DA97-08672A	ASSY HANDLE-BAR REF	AW3,BLACK	1	SA
	DA97-08672B	ASSY HANDLE-BAR REF	AW3,WHITE	1	SA

EXPLODED VIEW & PARTS LIST

5-6) Disassembly of Door Refrigerator R



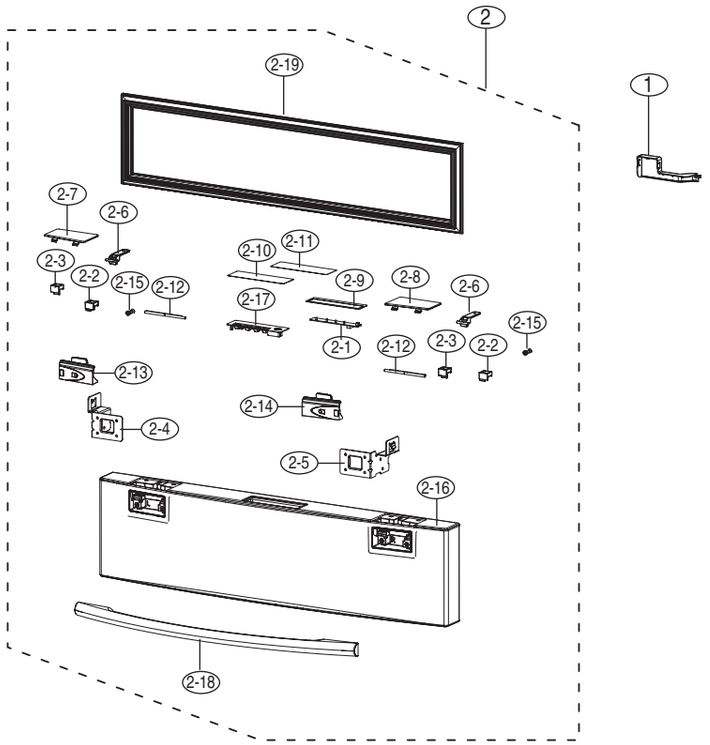
EXPLODED VIEW& PARTS LIST

■ Parts List of Door Refrigerator -R

NO	CODE-NO	PART NAME	SPEC	Q'ty	SERVICE
1	DA61-03734A	FIXER-HANDLE	AW-PJT,SWRCH18A,M8,-,GE	2	SA
2	DA91-03039A	ASSY DOOR FOAM REF-R	AW3,RS	1	SA
	DA91-03039B	ASSY DOOR FOAM REF-R	AW3,BP	1	SA
	DA91-03039C	ASSY DOOR FOAM REF-R	AW3,WP	1	SA
	DA91-03039D	ASSY DOOR FOAM REF-R	AW3,PN	1	SA
3	DA64-03248A	HANDLE-BAR REF	AW3,STAINLESS-STS304	1	SA
	DA97-08672A	ASSY HANDLE-BAR REF	AW3,BLACK	1	SA
	DA97-08672B	ASSY HANDLE-BAR REF	AW3,WHITE	1	SA
4	DA97-05253R	ASSY-GASKET DOOR REF	AW3,GRAY	1	SA
	DA97-05253Q	ASSY-GASKET DOOR REF	AW3,BLACK	1	SA
5	DA97-08406A	ASSY GUARD REF-R	AW3	3	SA
6	DA64-01985A	MASCOT	SBS,AL,T1.5,L90,Fixing-type,Siver	1	SA

AW3SM-EN2011.3.312:57PM페이지118 in

5-7) Disassembly of Flex Zone Door



EXPLODED VIEW& PARTS LIST

■ Parts List of Flex Zone Door

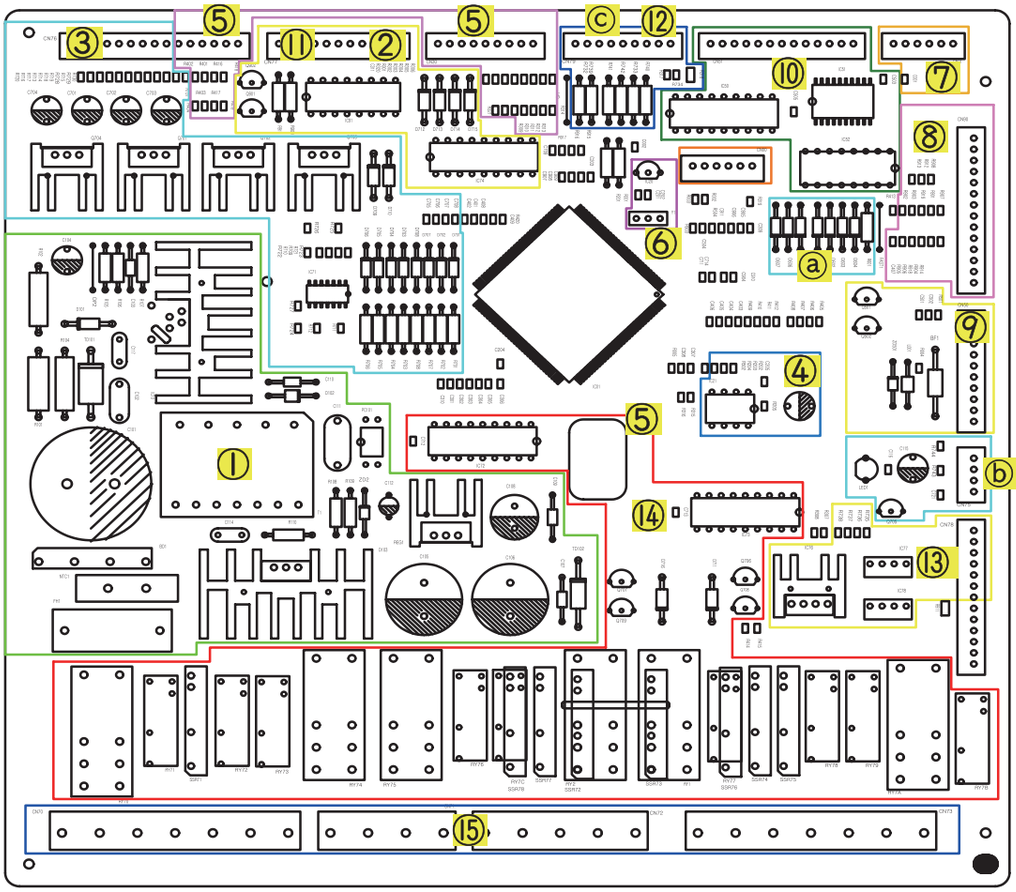
NO	CODE-NO	PART NAME	SPEC	Q'ty	SERVICE
1	DA63-05462A	COVER-W/HARNESS CONV DOOR	AW3,PP,COOL WH	1	SA
2	DA91-03035A	ASSY DOOR-CONV	AW3	1	SNA
2-1	DA41-00519R	PBA-LED LAMP	AW3,FR-4,65*10,3CHIP 3EA,DC	2	SA
2-2	DA61-05899A	FIXER-SHAFT R	AW3,POM,NTR	2	SA
2-3	DA61-05930A	FIXER-SHAFT L	AW3,POM,BLACK(SC-00477R)	2	SA
2-4	DA61-05937A	HANGER-RAIL FRONT CONV L	AW3,EGI-SECC,T2	1	SA
2-5	DA61-05938A	HANGER-RAIL FRONT CONV R	AW3,EGI-SECC,T2	1	SA
2-6	DA61-06014A	SLIDER-EASY HANDLE	AW3,RS,PN	2	SA
	DA61-06014B	SLIDER-EASY HANDLE	AW3,BP	2	SA
	DA61-06014C	SLIDER-EASY HANDLE	AW3,WP	2	SA
2-7	DA63-05432A	COVER-HANDLE L	AW3,Creamy STS	1	SA
	DA63-05432B	COVER-HANDLE L	AW3, I-Black	1	SA
	DA63-05432C	COVER-HANDLE L	AW3, Snow White	1	SA
2-8	DA63-05433A	COVER-HANDLE R	AW3,Creamy STS	1	SA
	DA63-05433B	COVER-HANDLE R	AW3, I-Black	1	SA
	DA63-05433C	COVER-HANDLE R	AW3, Snow White	1	SA
2-9	DA63-05524A	COVER-CAP DOOR LED	AW3,SAN,NTR	2	SA
2-10	DA63-05630A	COVER-CONTROL WINDOW CONV	AW3,ACRYL,T2.0	1	SA
2-11	DA64-03273A	INLAY-COVER CONTROL CONV	AW3,Creamy STS	1	SA
	DA64-03273B	INLAY-COVER CONTROL CONV	AW3, I-Black	1	SA
	DA64-03273C	INLAY-COVER CONTROL CONV	AW3, Snow White	1	SA
2-12	DA66-00579A	SHAFT-CAP HANDLE	AW-PJT,MSWR10,108,5,-,-	2	SA
2-13	DA67-02512A	CAP-HANDLE CONV L	AW3,Creamy STS	1	SA
	DA67-02512B	CAP-HANDLE CONV L	AW3, I-Black	1	SA
	DA67-02512C	CAP-HANDLE CONV L	AW3, Snow White	1	SA
2-14	DA67-02513A	CAP-HANDLE CONV R	AW3,Creamy STS	1	SA
	DA67-02513A	CAP-HANDLE CONV R	AW3, I-Black	1	SA
	DA67-02513A	CAP-HANDLE CONV R	AW3, Snow White	1	SA
2-15	DA61-04335B	SPRING ETC-EASY HANDLE	08 AW1,2-PJT,HSWR	2	SA
2-16	DA91-03008A	ASSY DOOR-FOAM CONV	AW3,RS	1	SA
	DA91-03008B	ASSY DOOR-FOAM CONV	AW3,BP	1	SA
	DA91-03008C	ASSY DOOR-FOAM CONV	AW3,WP	1	SA
	DA91-03008D	ASSY DOOR-FOAM CONV	AW3,PN	1	SA
2-17	DA97-10605A	ASSY COVER CONTROL-DISPLAY CONV	AW3,NTR	1	SA
2-18	DA64-02550A	HANDLE BAR-FRE	AW2-PJT,STS304,-,-,730,-,	1	SA
	DA64-03246A	HANDLE BAR-FRE	AW2-PJT,BLACK	1	SA
	DA64-03246B	HANDLE BAR-FRE	AW2-PJT,WHITE	1	SA
2-19	DA97-05557S	ASSY-GASKET DOOR FRE	AW3_CONV,GRAY	1	SA
	DA97-05557R	ASSY-GASKET DOOR FRE	AW3_CONV,BLACK	1	SA

6. PCB DIAGRAM

6-1) PCB Layout with part position · · ·

PCB DIAGRAM

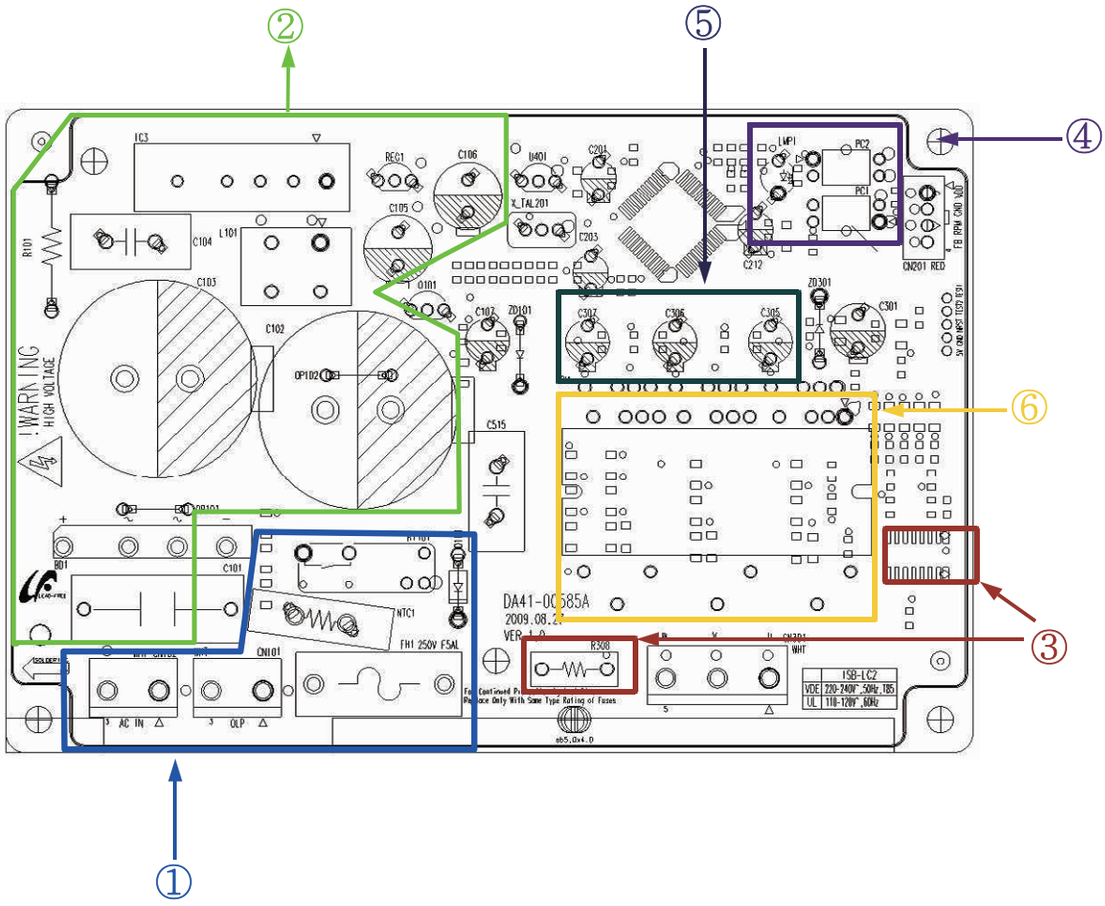
6-1) PCB Layout with part position



1. DC12V, 5V, GND supplied from SMPS PCB
2. Circuit for controlling Step-Valve (3-Way Valve) * Option
3. FAN MOTOR control part : To supply the power from 8.3V ~ 12V according to the motor types. (F,R,C,ICE)
4. EEPROM : Save and record every kinds of data.
5. Transmit inputted signals from every sensor into MICOM after eliminate the noise.
6. Micom : control the regrigerator Ceramic resonator : generate the basic frequency of Micom operation.
   Reset IC : make Micom reset if input voltage of Micom is detected less than the specified voltage
7. PLC input/output
   - PLC (Power Line communication) * Option(PLC module is not inserted unless specified occasion)
8. Operate ICE-MAKER, supply power to MOTOR, and sense the variation of switch.
9. Main Micom ↔ Panel Micom serial communication circuit
   - Dispenser option input part (Water & Cover Ice route switch)
10. Flex room display control part : display LED, detect KEY state.
11. Control Flex room damper & Damper heater
12. Water Tank Heater Controls (also controls other options)
13. LED LAMP Control Circuit (F,R,Flex Lamp)
14. Relay parts that controls AC load and receives Micom operating signal through Sink IC.
15. Connector with AC load
    a. Diode option setting area
    b. Inverter COMP controlling signal
    C. Flow Sensor controlling signal

PCB DIAGRAM

6-2) PCB Layout with part position (Inverter Board)

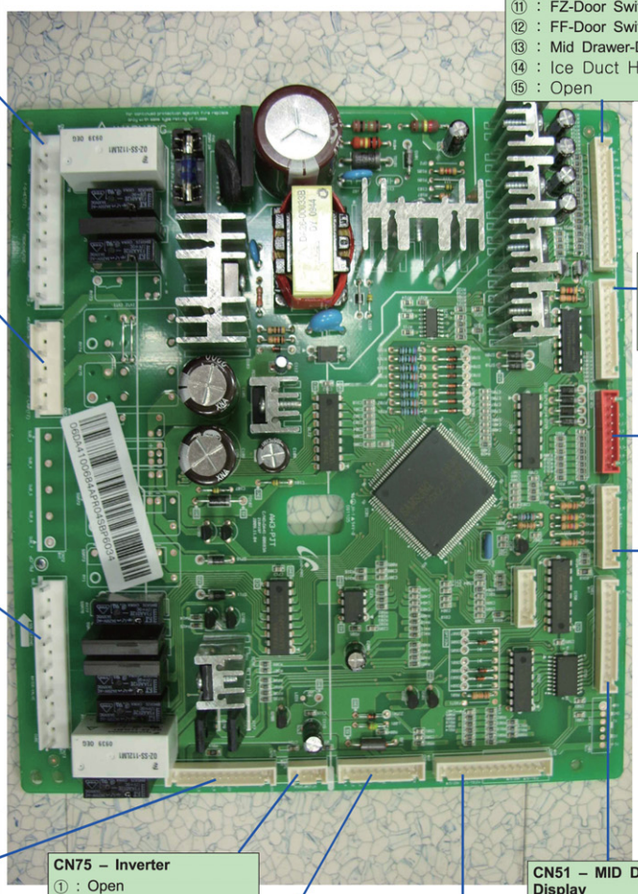


1. Inrush current protecting area : It prevents an instant inrush of current generated in condenser when plug in.
2. PCB Power Bus : power bus (Hybrid IC). It supplies DC15V and 5V to MICOM.
3. Current detecting area : It detects the current from the SHUNT resistance and controls PWM DUTY.
4. COMP operating Signal area : It receives COMP operating signal from Main PCB and conduct it.
5. BOOTSTRAP live part : Charging circuit that 1GBT of SPM can On/Off securely.
6. IPM : The output circuit for operating COMP of the Refrigerator.

PCB DIAGRAM

6-3) Connector Layout with part position (Main Board)

6-3-1. RF4287HA**



CN76 - BLDC Motor & door Switch
① : GND
② : Ice Room-FAN operation signal
③ : FZ-FAN operation signal
④ : FF-FAN operation signal
⑤ : C-FAN operation signal
⑥ : Ice Room-FAN signal input volt
⑦ : FZ-FAN signal input volt
⑧ : FF-FAN signal input volt
⑨ : C-FAN signal input volt
⑩ : GND
⑪ : FZ-Door Switch
⑫ : FF-Door Switch
⑬ : Mid Drawer-Door Switch
⑭ : Ice Duct Heater Signal Input
⑮ : Open

CN70 - AC LOAD
① : Open
③ : ICE MAKER HEATER(FF)
⑤ :FRENCH-HEATER
DISPENSER-HEATER
⑦ : FF-DEF-HEATER
⑨ : FZ-DEF-HEATER
⑪ : COMMON2 LINE(L)
⑬ : COMMON1 LINE(N)

CN71 - AC LOAD
① : Open
③ : COMMON1 LINE(N)
⑤ : Open
⑦ : Open

CN73 - AC LOAD
① : CUBE SOLENOIDE VALVE
③ : AUGER MOTOR
⑤ : WATER SOLENOIDE VALVE
⑦ : ICE WATER SOLENOIDE VALVE(FF)
⑨ : ICE COVER ROUTE
⑪ : ICE MAKERMOTOR(CW)
⑬ : ICE MAKER MOTOR(CCW)

CN78 – LAMP(LED)/Sensor
① : FZ LAMP(LED)
② : GND
③ : FF LAMP(LED)
④ : Open
⑤ : GND
⑥ : MID DRAWER LED
⑦ : GND
⑧ : AMBIENT Sensor
⑨ : Open
⑩ : ICE ROOM Sensor
⑪ : +5V
⑫ : GND
⑬ : +12V

CN77 - Damper & Valve
①~② : Damper Heater
③~⑥ : Damper Motor
⑦ : +12V
⑧~⑪ : Step Valve

CN30 - Sensor
① : GND
② : +5V
③ : Humidity
④ : FZ-Sensor
⑤ : FZ-DEF-Sensor
⑥ : FF-Sensor
⑦ : Open
⑧ : FF-DEF-Sensor
⑨ : Mid Drawer-Sensor

CN79
① : +12V
② : +12V
③ : Mid Drawer Box Fan
④ : Mid Drawer Box Fan
⑤ : Open(Do Not Use)
⑥ : +5V
⑦ : Flow Sensor Out
⑧ : GND
⑨ : +5V

CN75 – Inverter
① : Open
② : +5V
③ : Open
④ : COMP. SIGNAL

CN50
① : LED PANEL TX
② : LED PANEL RX
③ : +12V
④ : +5V
⑤, ⑥ : GND
⑦ : ICE Switch
⑧ : Water Switch
⑨ : ICE Route Switch 1
⑩ : ICE Route Switch 2

CN90 - Ice Maker
① : Sensor(FF)
② : Test Switch
③ : Full Switch
④ : Horizontal Switch
⑤ : +5V
⑥ : Open
⑦ : GND
⑧, ⑭ : Open

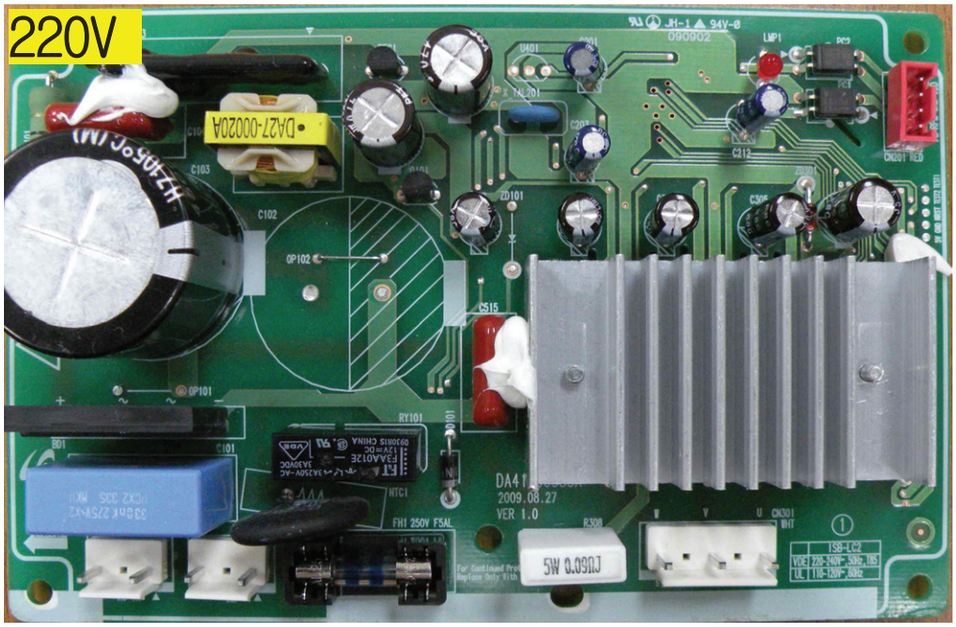
CN51 – MID DRAWER Display
① : ICE Duct Heater Signal Input(CN76-4)
② : Ice Duct Heater
③~ ⑦ : Mid Drawer Room LED Driver
⑧~⑩ : Open
⑪ : Mid Drawer Switch
⑫ : +12V
⑬ : GND

PCB DIAGRAM

6-4) Connector Layout with part position (Inverter Board)

6-4-1. RF4287HA**

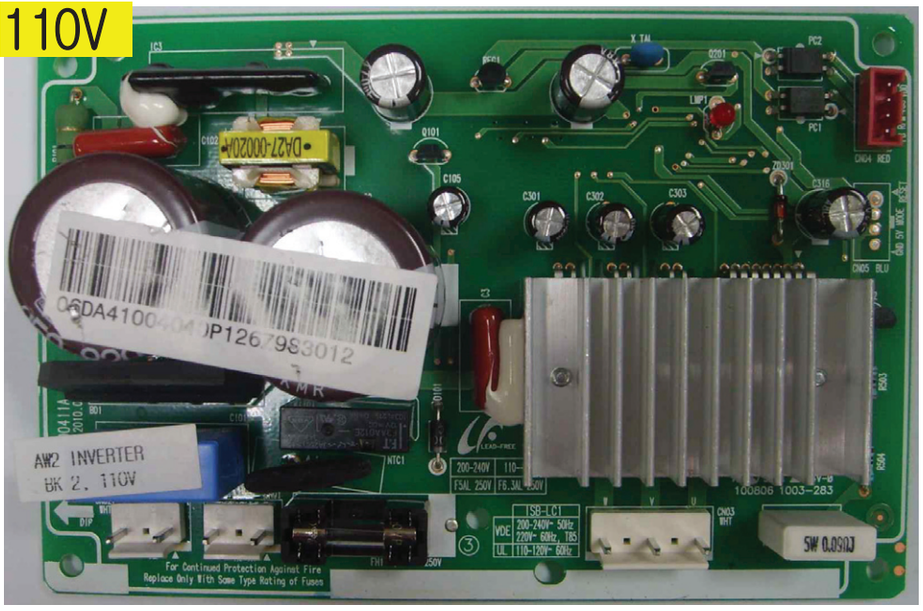
220V



①VDD
②VSS
③RPM
④FB

POWER(220V) OLP ①U상 ②V상 ③W상

110V

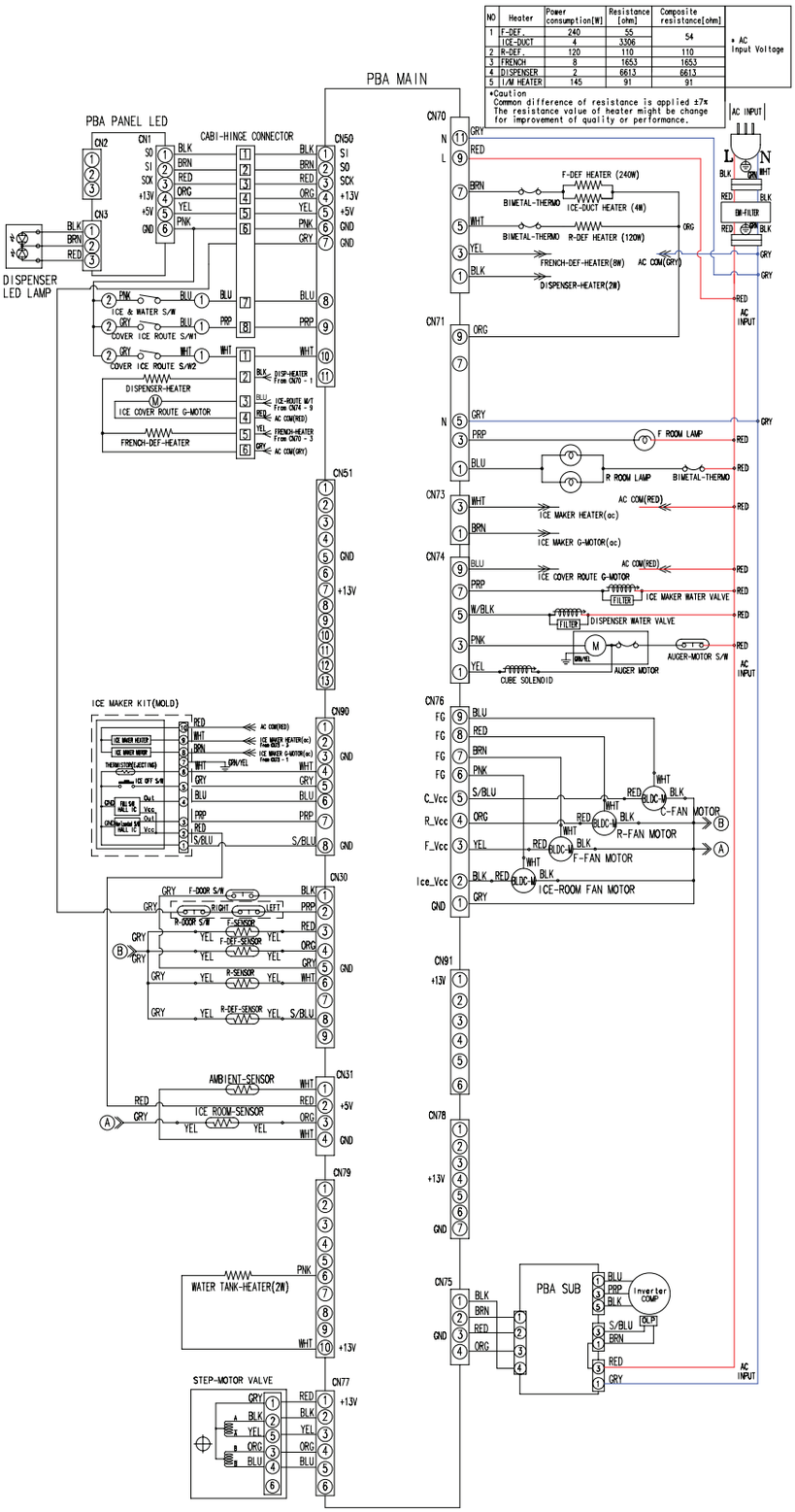


①VDD
②VSS
③RPM
④FB

POWER(220V) OLP ①U상 ②V상 ③W상

7. WIRING DIAGRAM

7-1) Model : RFG295AA**[BETTER]



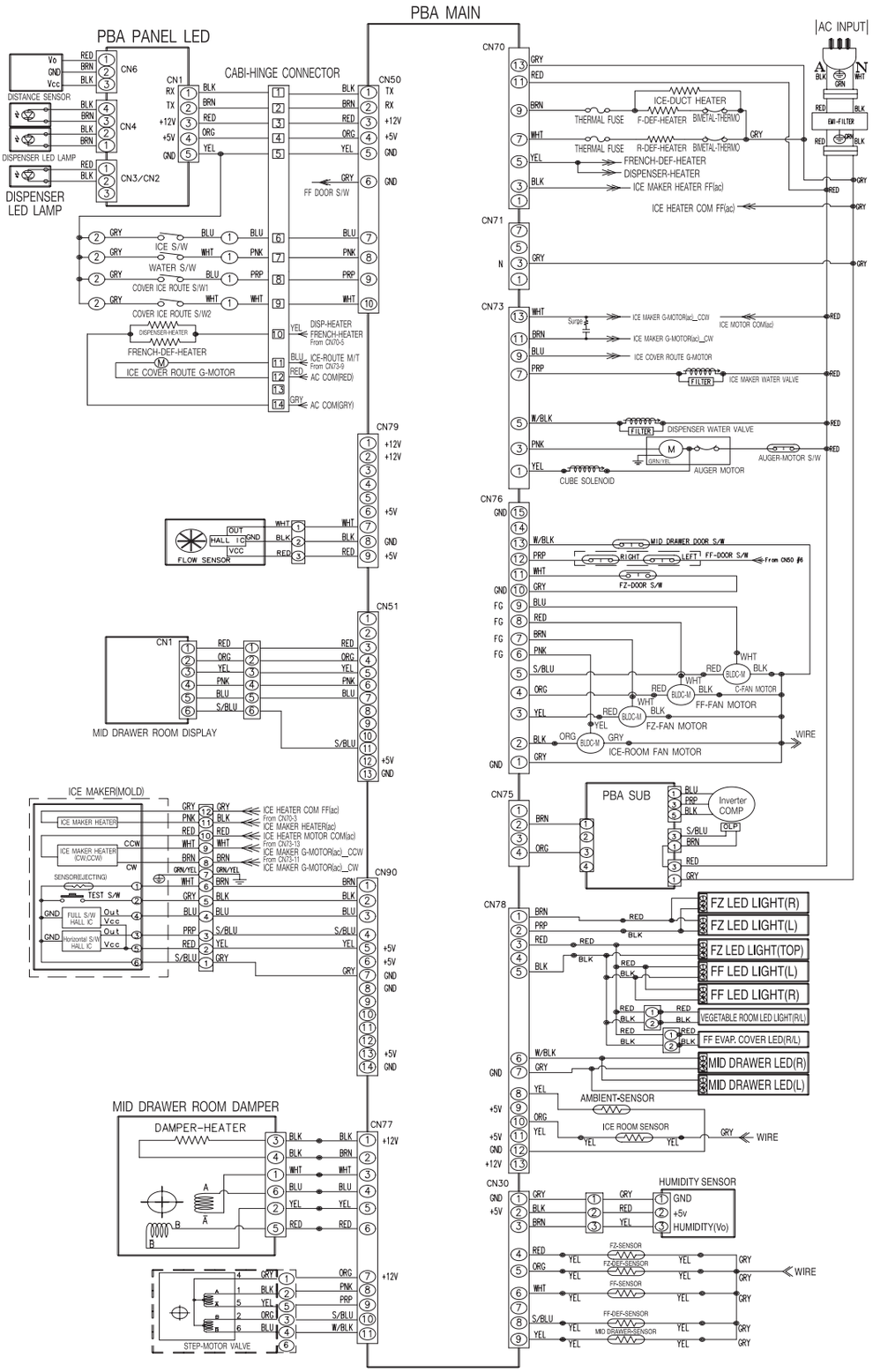
NO	Heater	Power consumption[W]	Resistance [ohm]	Composite resistance[ohm]
1	F-DEF.	240	55	54
	ICE-DUCT	4	3306	
2	R-DEF	120	110	110
3	FRENCH	8	1653	1653
4	DISPENSER	2	6613	6613
5	I/M HEATER	145	91	91

*Caution
Common difference of resistance is applied ±7%
The resistance value of heater might be change for improvement of quality or performance.

* AC Input Voltage

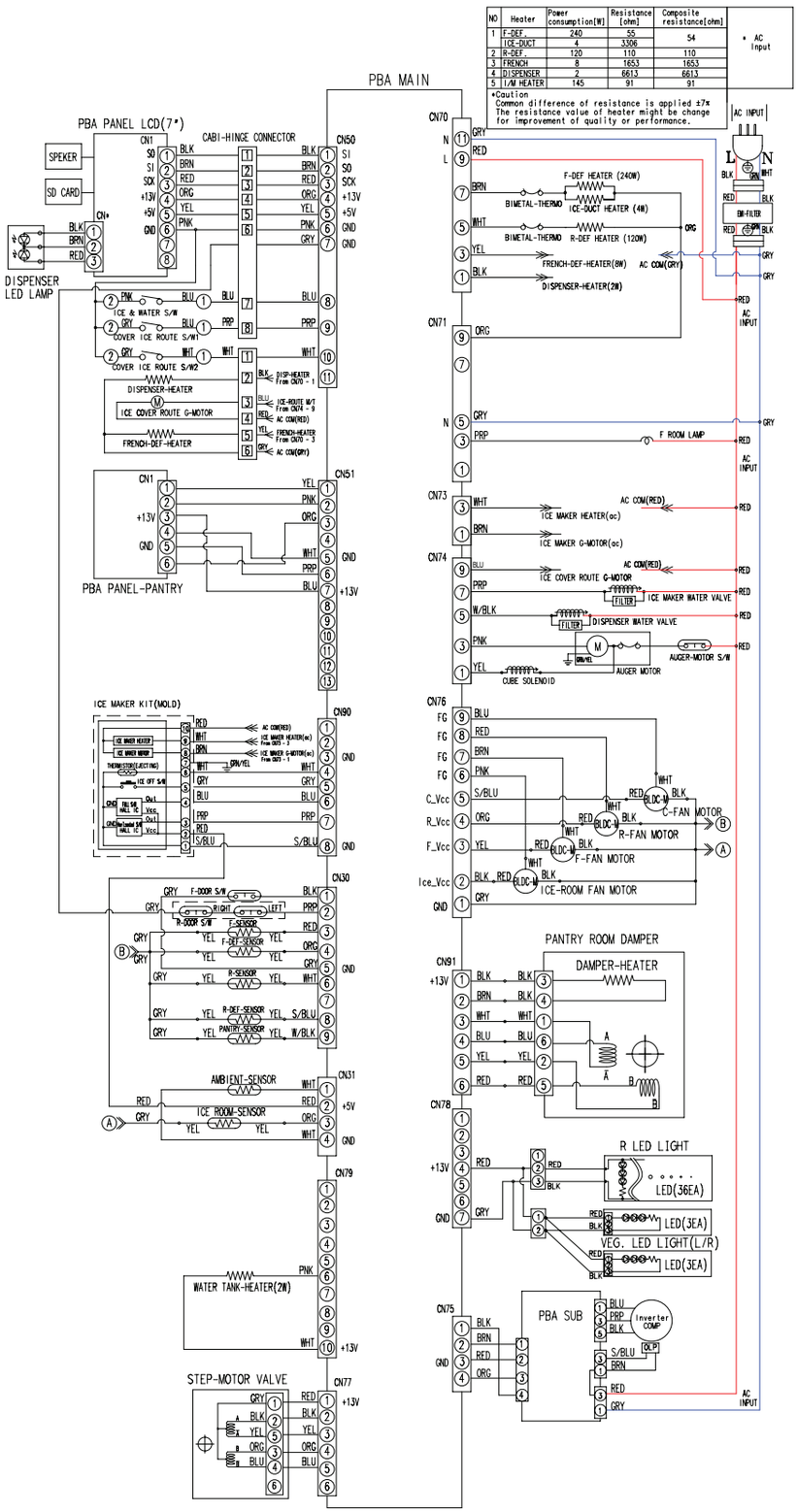
7. WIRING DIAGRAM

7-2) Model : RF4287AA**[BEST]



7. WIRING DIAGRAM

7-3) Model : RFG299AA**[7" LCD]



NO	Heater	Power consumption[W]	Resistance [ohm]	Composite resistance[ohm]
1	F-DEF.	240	55	54
	ICE-DUCT	4	3306	
2	R-DEF.	120	110	110
3	FRENCH	8	1653	1653
4	DISPENSER	2	6613	6613
5	I/M HEATER	145	91	91

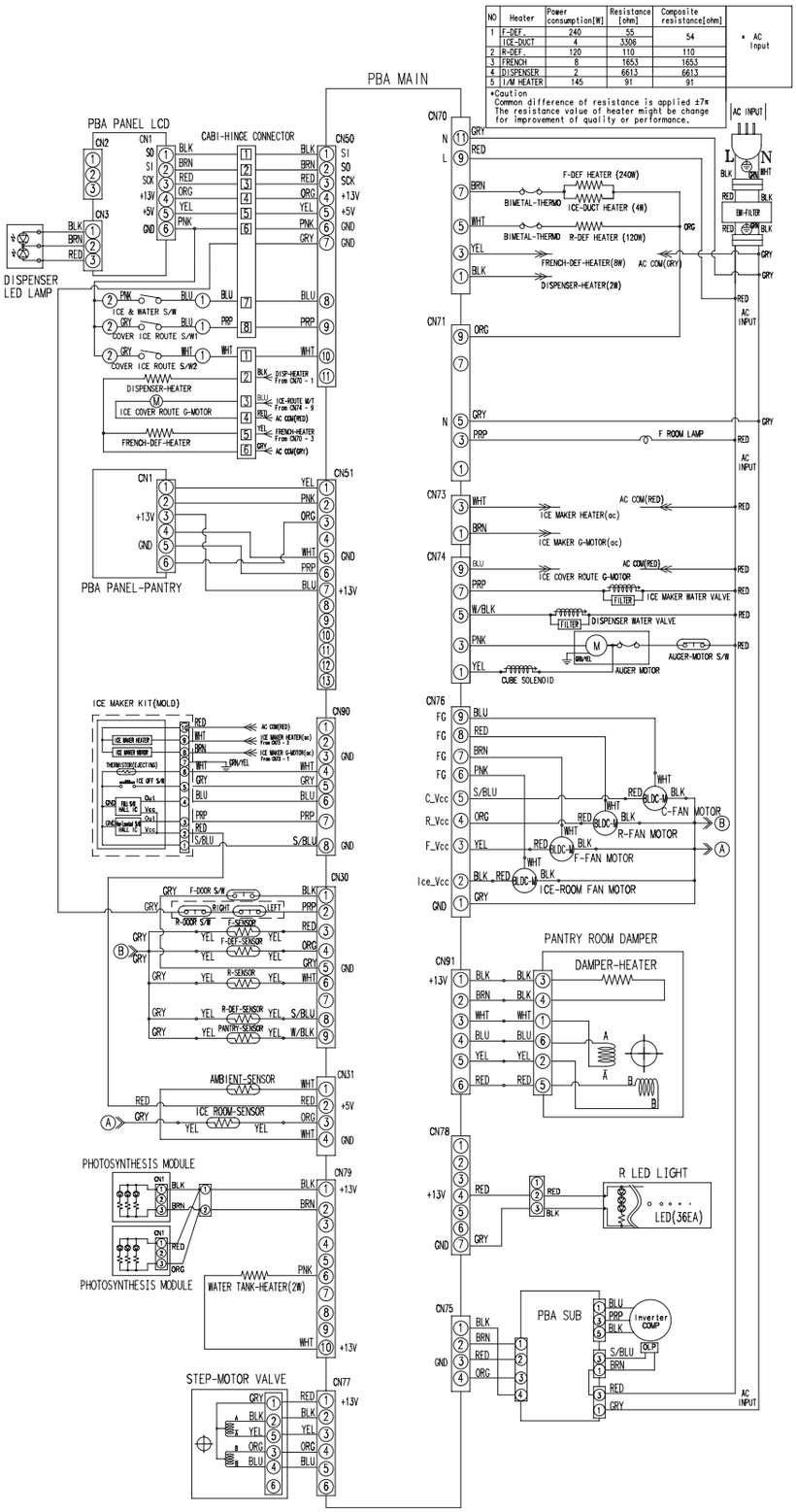
* AC Input

*Caution
Common difference of resistance is applied ±7%
The resistance value of heater might be change for improvement of quality or performance.

AW3SM-EN2011.3.312:57PM페이지128 in

7. WIRING DIAGRAM

7-4) Model : RFG294AA**[SEARS]

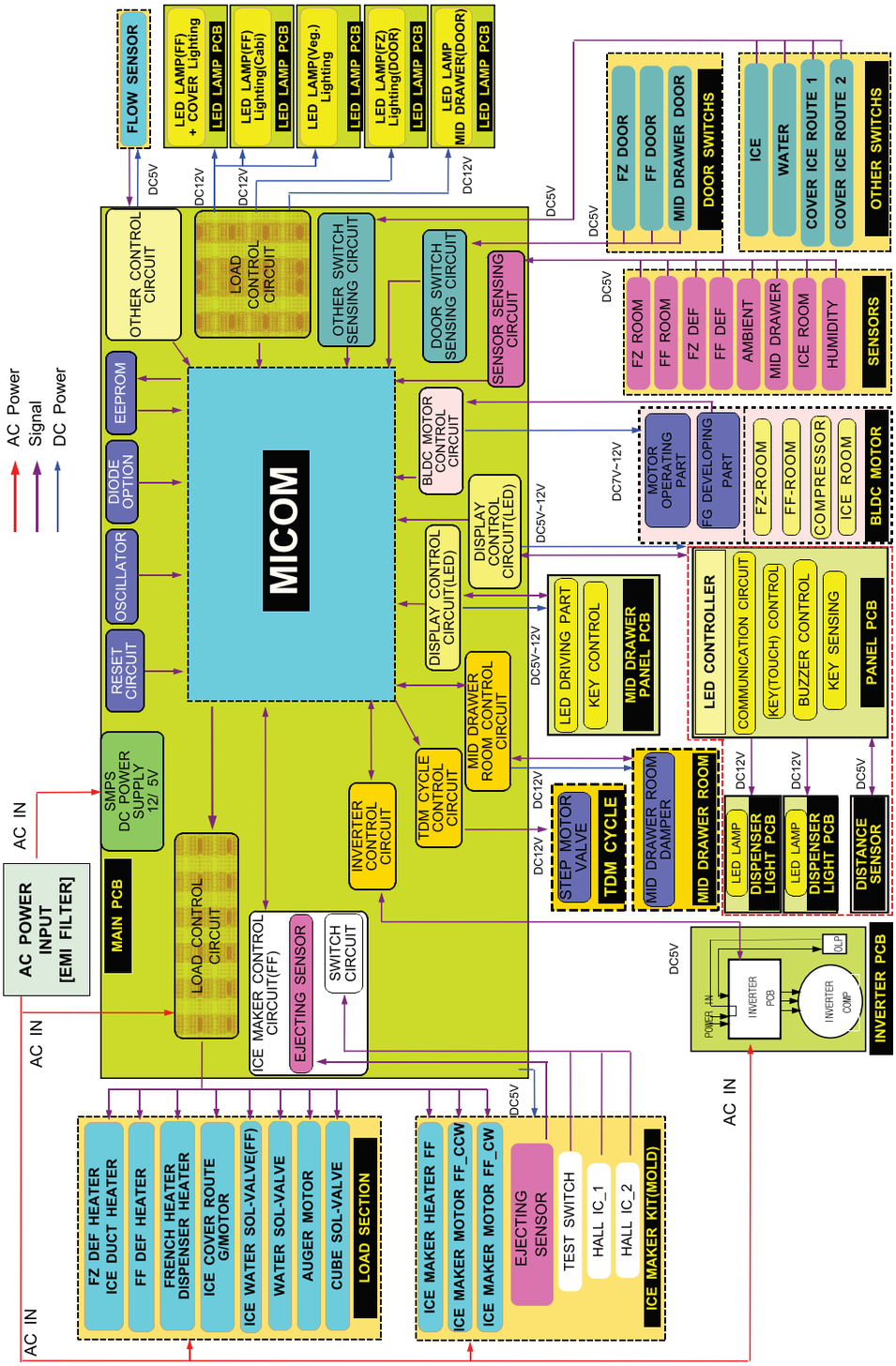


NO	Heater	Power consumption[W]	Resistance [ohm]	Composite resistance[ohm]
1	F-DEF.	240	55	54
	ICE-DUCT	4	3306	
2	R-DEF	120	110	110
3	FRENCH	8	1653	1653
4	DISPENSER	2	6613	6613
5	I/M HEATER	145	91	91

8. SCHEMATIC DIAGRAM

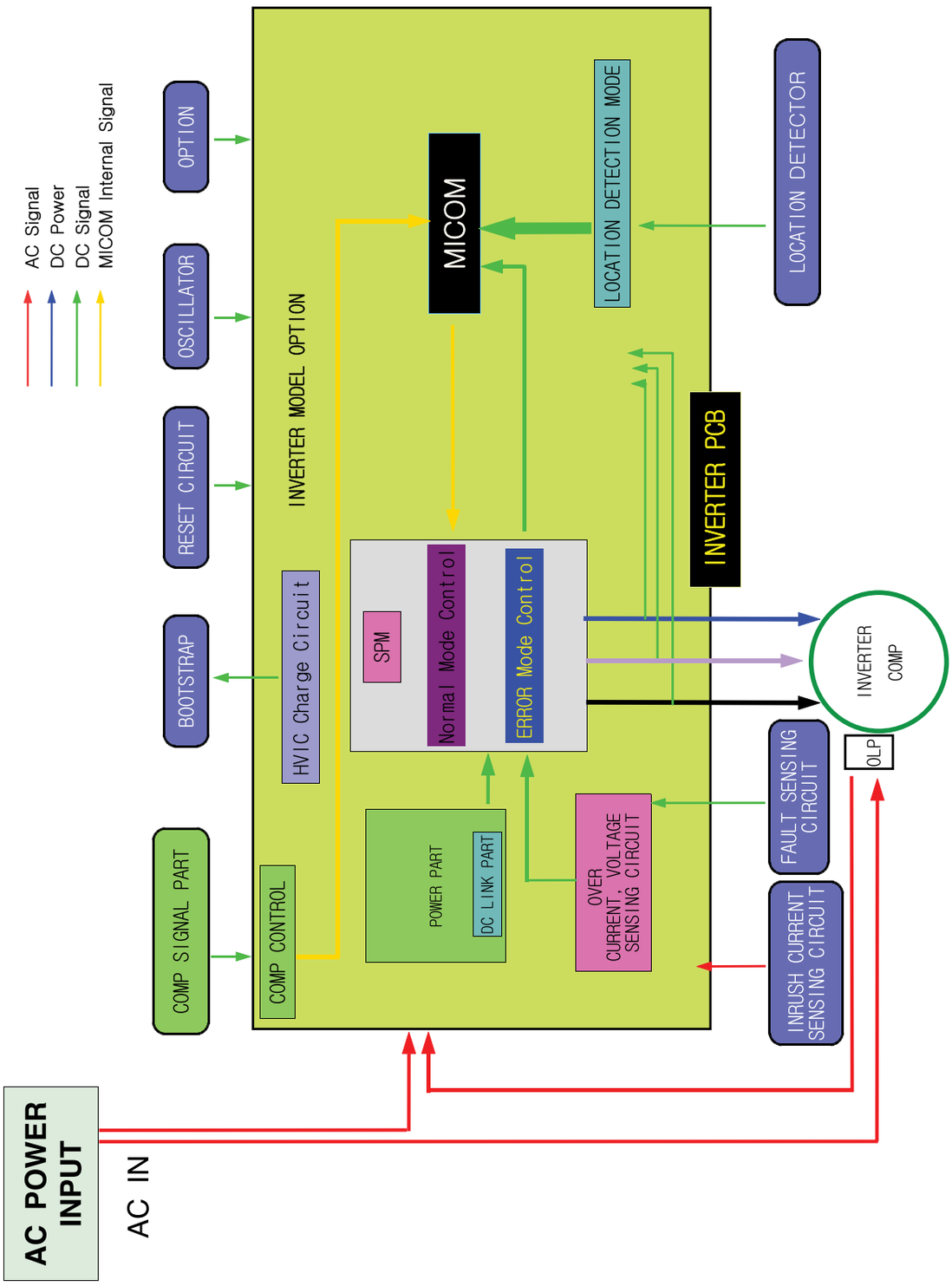
8-1) Whole block diagram

8-1-1. MAIN BLOCK(RF4287**)



8. SCHEMATIC DIAGRAM

8-1-2. INVERTER BLOCK(RF4287***)

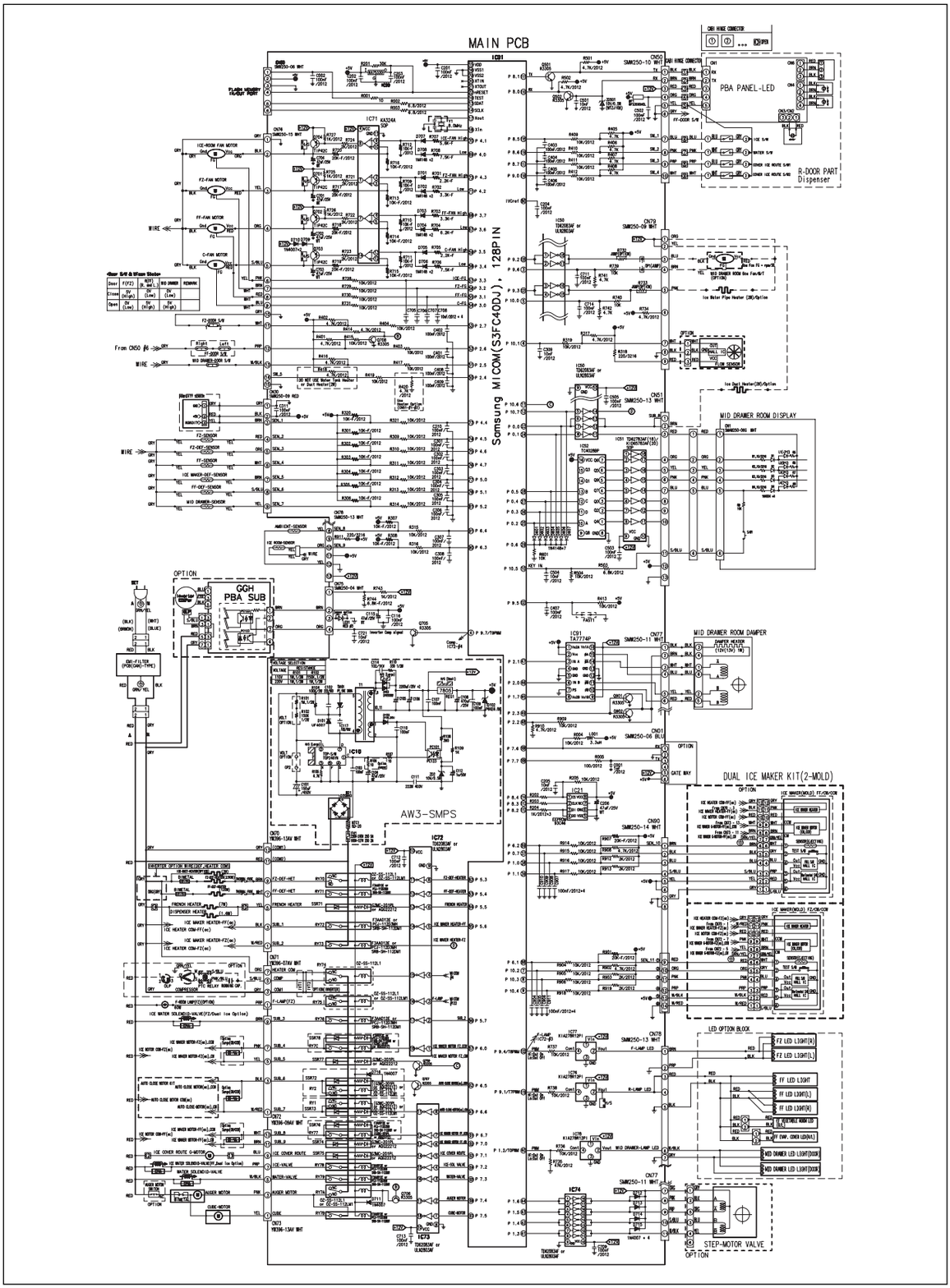


AW3SM-EN2011.3.312:58PM페이지131 in

SCHEMATIC DIAGRAM

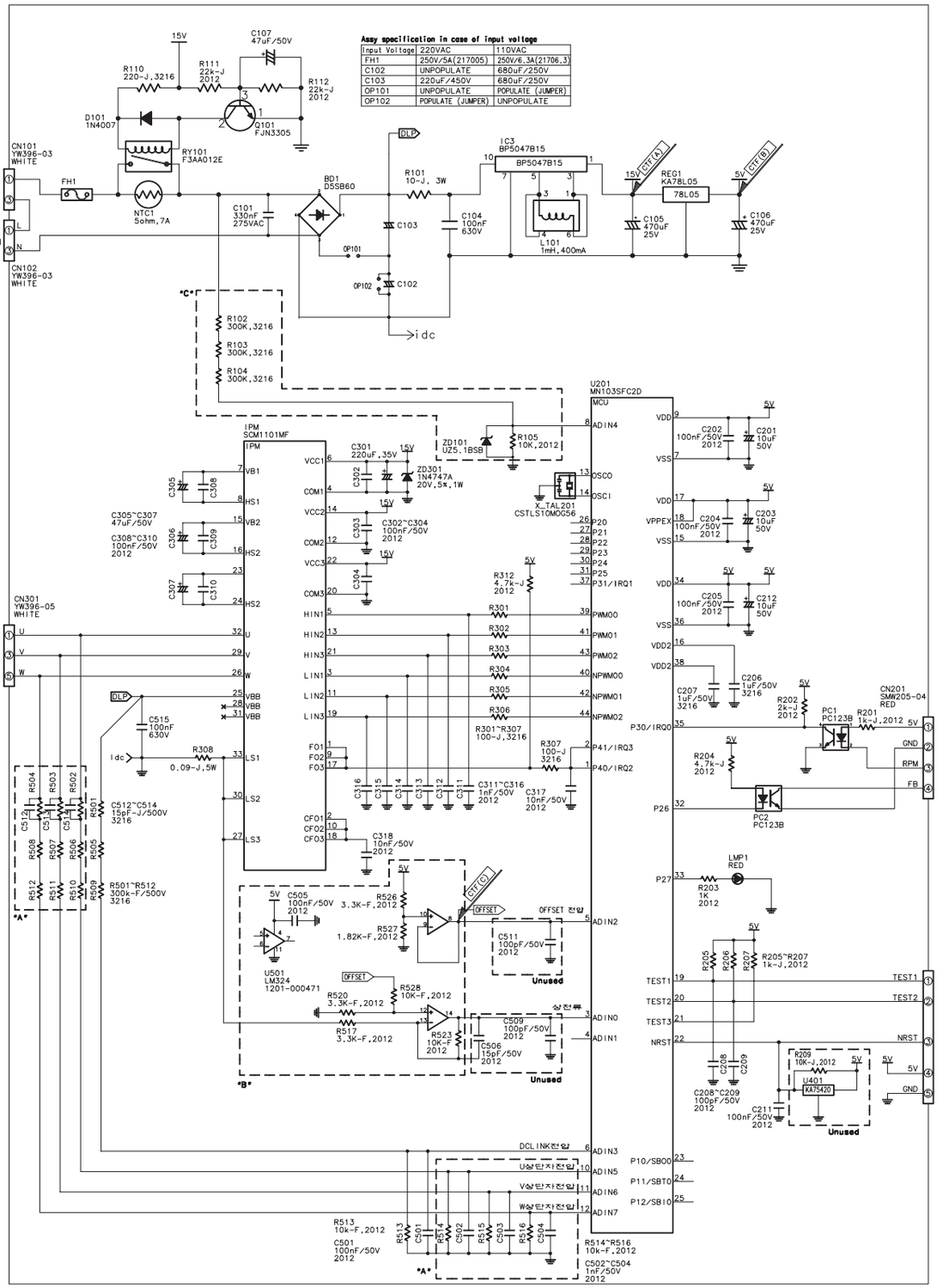
8-2) CIRCUIT DIAGRAM

8-2-1. MAIN



SCHEMATIC DIAGRAM

8-2-2. INVERTER



272, Oseon-Dong, Gwangsan-Gu,
Gwangju-City, Korea, 506-253
TEL : 82-62-950-6193, 6896
FAX : 82-62-950-6829

- This Service Manual is a property of Samsung Electronics Co., Ltd.
Any unauthorized use of Manual can be punished under applicable
International or domestic law.

© Samsung Electronics Co., Ltd.
Refrigerator Division 2010
Printed in Korea